TOSHIBA

FILE NO. 020-200415
REVISION 2

SERVICE MANUAL

Integrated HD Projection Television

51H94
57H94

DOCUMENT CREATED IN JAPAN, Mar., 2005

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CHAPTER 1 GENERAL ADJUSTMENTS

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is (A) kV at zero beam current (minimum brightness) under a 120V AC power source. The high voltage must not, under any circumstances, exceed (B) kV.

   Refer to table-1 for high voltage (A), (B).
   (See SETTING & ADJUSTING DATA on page 20)

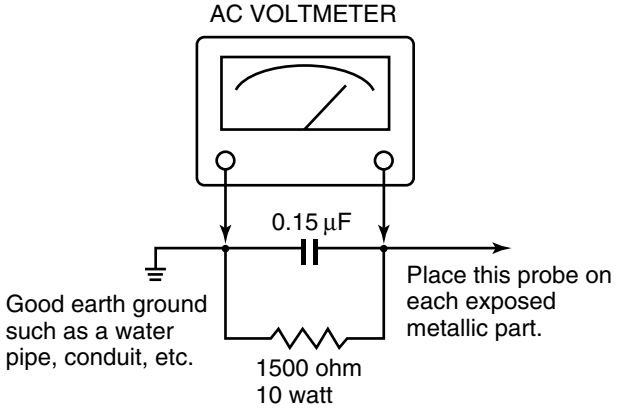
   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. This receiver is equipped with a Fail Safe (FS) circuit which prevents the receiver from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the receiver is serviced, the FS circuit must be checked to determine that the circuit is properly functioning, following the FS CIRCUIT CHECK procedure in this manual.
3. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
4. Some part in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation Transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner:

   Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μF, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 μF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.675 volts rms. This corresponds to 0.45 milliamp. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

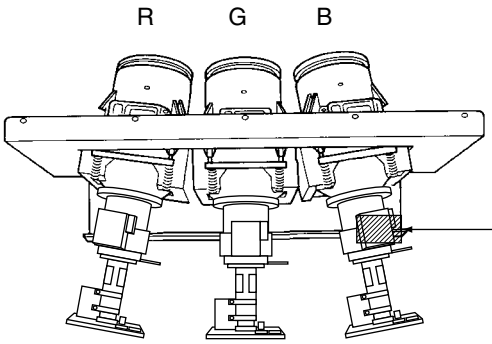

AC VOLTMETER
0.15 μF
Good earth ground such as a water pipe, conduit, etc.
Place this probe on each exposed metallic part.
1500 ohm
10 watt

PRODUCT SAFETY NOTICE

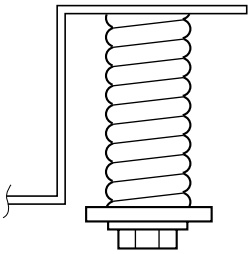
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-ray radiation or other hazards.

CRT ASSEMBLY REPLACEMENT AND MOUNTING

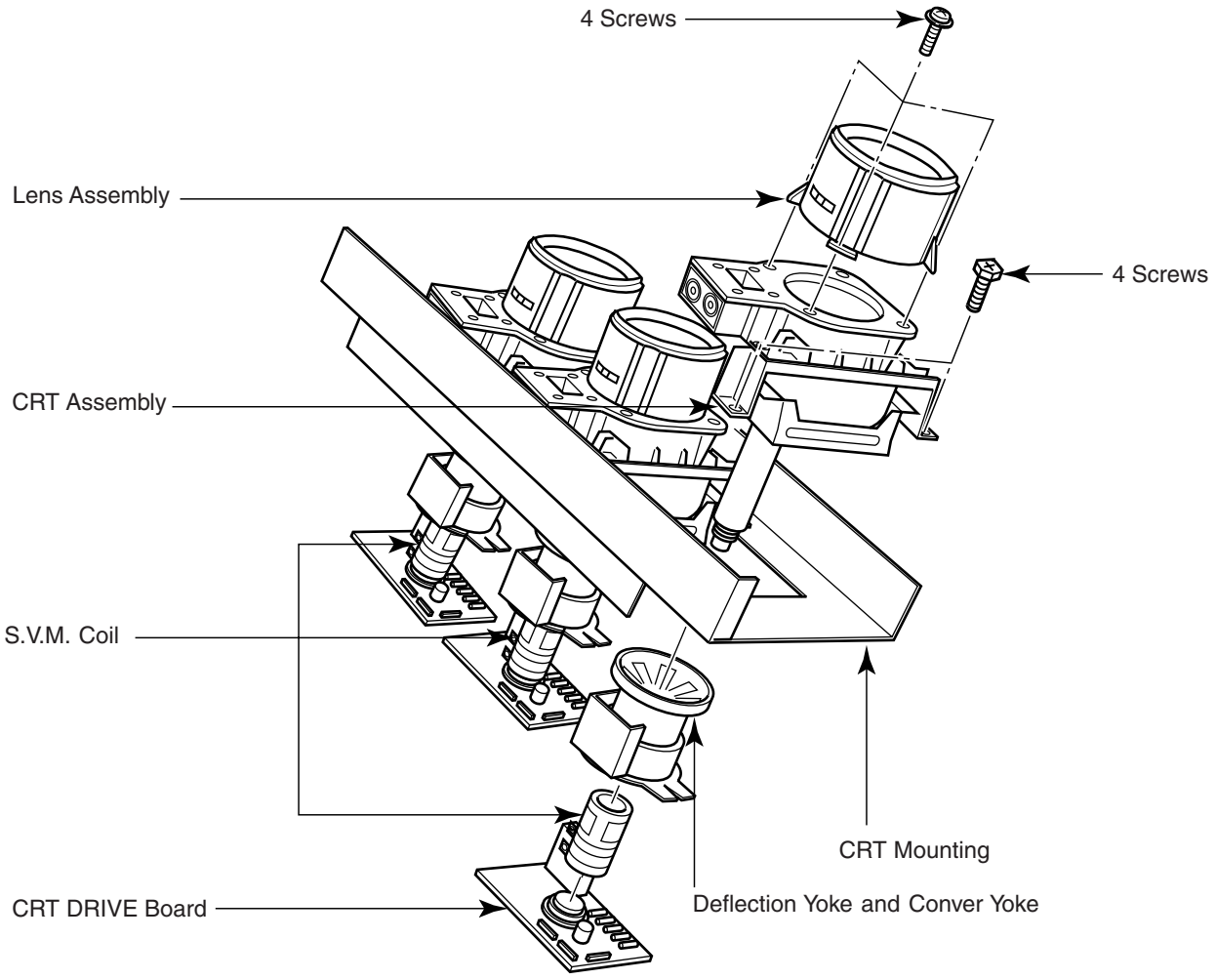
CAUTION : DO NOT LOOSEN THE HEX HEAD BOLTS WITH SPRINGS (12 PCS), BECAUSE THOSE ARE FOR SEALING OF CRT COOLANT.



Attention Serviceman



The Hex Head Bolts with Springs. (see sketch) used on CRT assembly, are NOT Adjustment Screws DO NOT LOOSEN-FLUID LEAKAGE WILL OCCUR.



Lens and Neck Components View

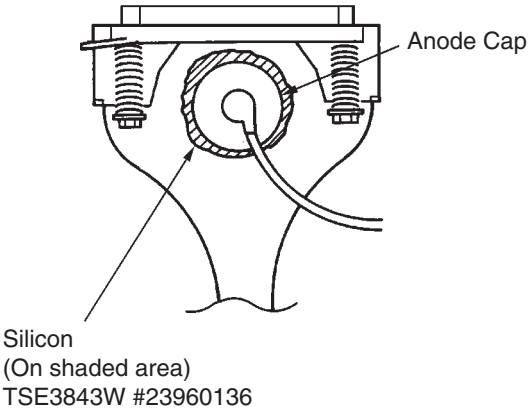
TO REMOVE CRT (Same procedure for R, G, B)

1. Remove CRT DRIVE Board, S. V. M. COIL and DEF. YOKE from CRT.
2. Remove Lens Assembly.
3. Detach CRT Anode Cap from CRT.
4. Remove CRT Assembly from CRT Mounting.

CRT REPLACEMENT (Same procedure for R, G, B)
Reverse the removal procedures except the followings.

1. Anode Cable should be replaced with new one. See “SERVICING PRECAUTIONS” shown below.
2. Install silicon (T461B) to the CRT, replace the Anode cable and put enough silicon again on around the Anode Cap as illustrated.

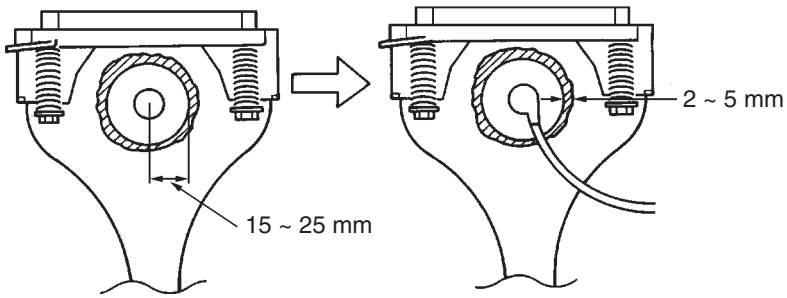
CAUTION: Align the Anode cable as illustrated on page 4.



ADJUSTING PROCEDURE IN REPLACING CRT

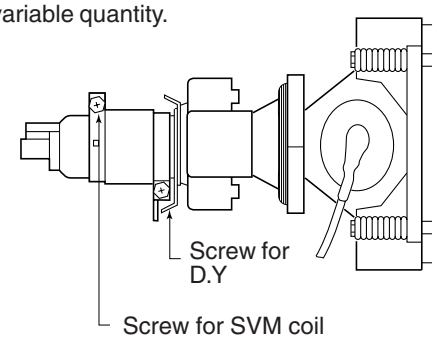
1. R.G.B. FOCUS ADJUSTMENT (page 7.)
2. PICTURE TILT ADJUSTMENT (page 7.)
3. USER CONVERGENCE CENTER CHECK (See owner's manual.)
4. CENTERING ADJUSTMENT (page 7.)
5. CONVERGENCE ADJUSTMENT (page 15.)
6. WHITE BALANCE ADJUSTMENT (page 12.)

Adjustments are complete.



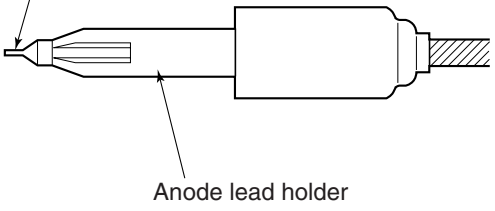
SERVICING PRECAUTIONS

■ Do not use a magnetized screw driver for screws of Deflection Yoke and Velocity Modulation Coil to avoid magnetization of electron gun. Magnetization of electron gun will degrade basic function and result in unbalance of right and left shift of user static convergence, and result in no variable quantity.



■ When replacing the anode cap assembly (CRT) or anode lead assembly (F.B.T.), remove the anode lead holder from old one and attach the holder again to new anode lead.

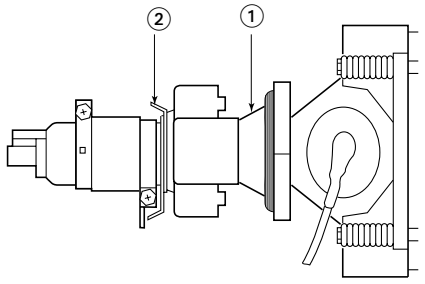
■ Check the point of anode lead in a straight line, if it is winding, please revise it.



WARNING : BEFORE SERVICING THIS CHASSIS, READ THE “X-RAY RADIATION PRECAUTION”, “SAFETY PRECAUTION” AND “PRODUCT SAFETY NOTICE” ON PAGE 3 OF THIS MANUAL.

PICTURE TUBE COMPONENTS ADJUSTMENT

DESCRIPTION OF NECK COMPONENTS



① Deflection yoke and convergence yoke
The position on the neck is required most front (CRT funnel side) and the screw is fastened after rotating yoke adjusting picture tilt.

② Centering magnet
After adjusting picture tilt, picture position is finally fixed by this magnet.
In order to get maximum margin of user convergence control for center of screen, this magnet have to be used for center convergence adjustment.

PREPARATION
Operate the receiver for at least 5 minutes.

R, G, B FOCUS ADJUSTMENT

1. Before adjusting the R, G, B FOCUS, remove the 4 screws of Lens Assembly which is fixed on the CRT Assembly. (See page 4.)
   Then turn around the Lens Assembly by 180 to adjust the fastening screw (Fig. a) and fasten the 4 screws to secure Lens Assembly.
2. Select the adjustment mode. (See page 10.)
3. Press “7” button to display the built-in cross-hatch.
4. Press “0” and “RTN” buttons to make the picture a single Red color.
   100 button ..... to erase Red color
   0 button ..... to erase Green color
   RTN button ..... to erase Blue color.
5. Loosen the fasten screw and adjust Red lens focus to best focusing point of picture center. Then fasten the screw. (See Fig. a.)

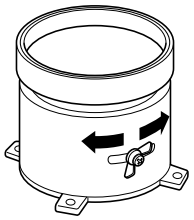


Fig. a

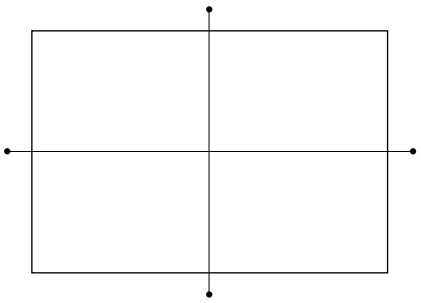
6. Adjust FOCUS VR “R” of FOCUS PACK to find best focusing point of picture center.
7. Repeat steps 3 to 5 for Green and Blue colors.

TILT ADJUSTMENT

Rotate R, G, B deflection yoke so that picture becomes horizon, then fasten screw.

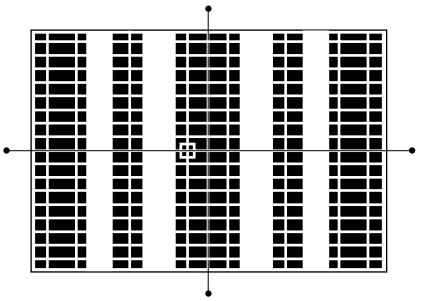
CENTERING ADJUSTMENT

1. Stretch a thread between two center of screen edge (top and bottom, left and right).



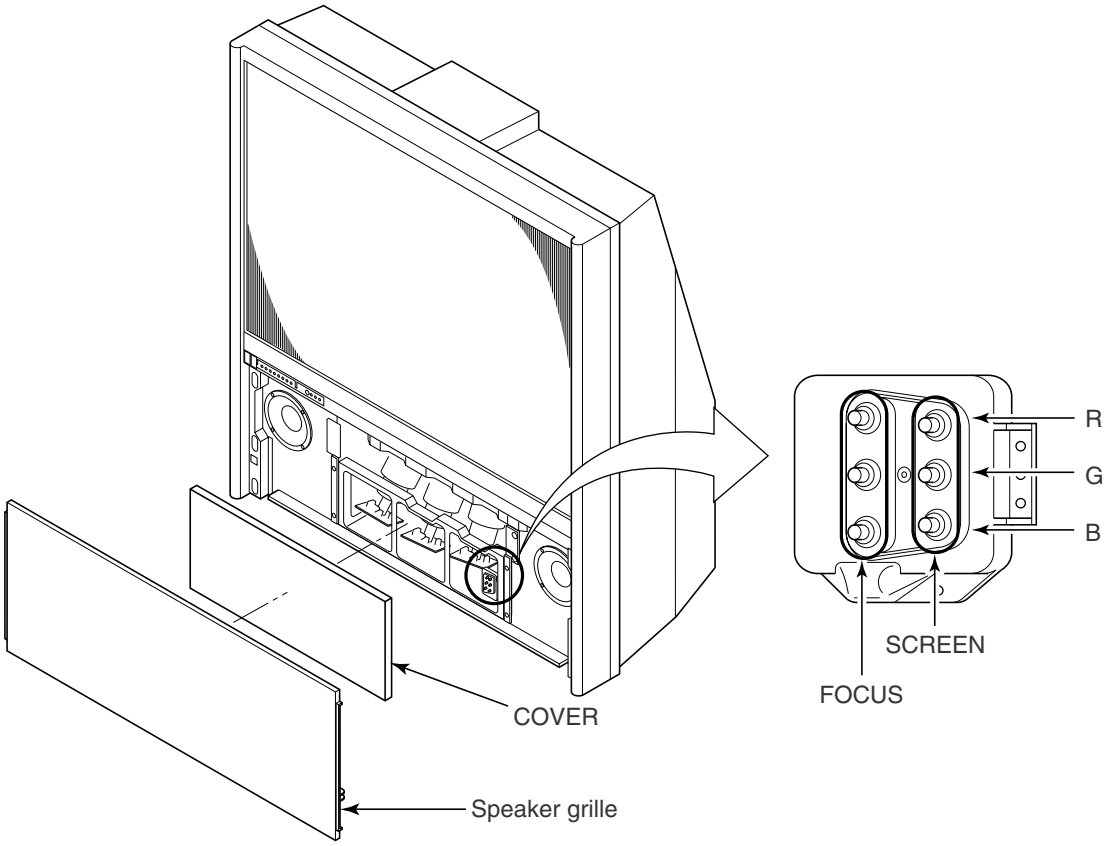
2. Receive NTSC.
   Then select SERVICE MODE. (See Page 10.)

3. Select CONVERGENCE ADJUSTING mode, and press "7" button to display the internal net pattern.
   Move Cursol and recognize horizontal line indicated Y:4. This line is vertical center. Push "9" button to display the vertical stripes, and recognaize horizontal center.



4. Perform VCEN adjustment. (See page 16.)
5. Adjust G centering magnet so that the cross-bar pattern center comes to screen center.
6. Perform HEIGHT adjustment .
7. Perform VERT. LINEARITY adjustment.
8. Perform WIDTH adjustment. (See page 16.)
9. Check whole quality of green line.
10. Adjust R, B centering magnet so that the cross-bar pattern center comes to screen center.

LOCATION OF SCREEN AND FOCUS VR'S

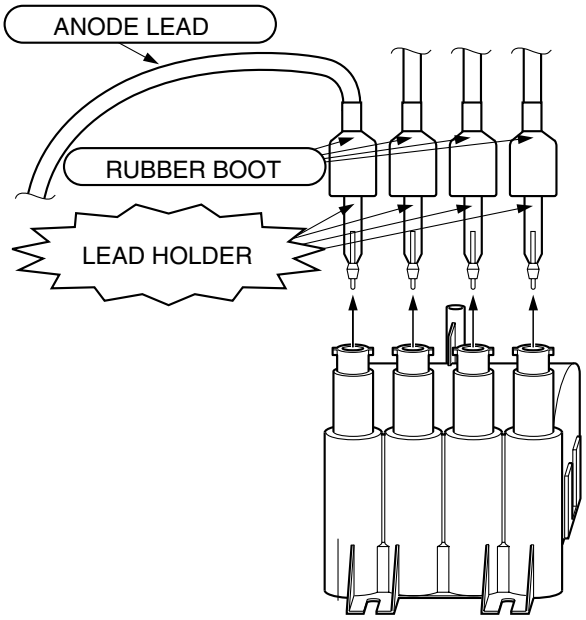


REPLACEMENT OF THE CRT

Service parts are provided for each R, G and B.
The contents of the parts are as follows.

		R	G	B
57H94	HOKUTO	2334118	2334119	2334120
51H94	HITACHI	2334122	2334123	2334124

REPLACEMENT OF HIGH VOLTAGE CABLE



Z450 TPA5011

Fig. a

1. When replacing Anode Lead or Anode Cap with new one, remove Lead Holder from old lead as shown in figure below, and put it on new lead. Do not throw away Lead Holder.

NOTE : THE LEAD HOLDER IS ATTACHED TO TPA5011 (Z450), BUT IS NOT ATTACHED TO ANODE LEAD AND ANODE CAP. RUBBER BOOT IS ATTACHED TO ANODE LEAD AND ANODE CAP.

2. Detaching Lead Holder

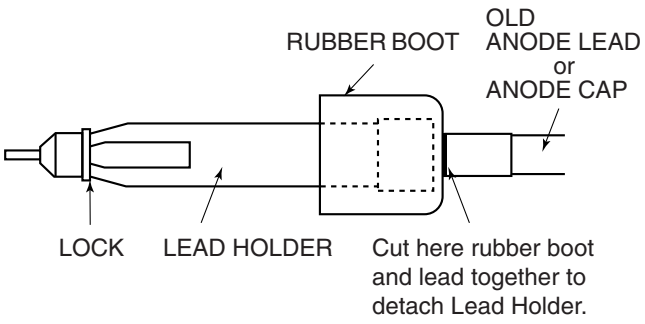


Fig. b

SERVICE MODE

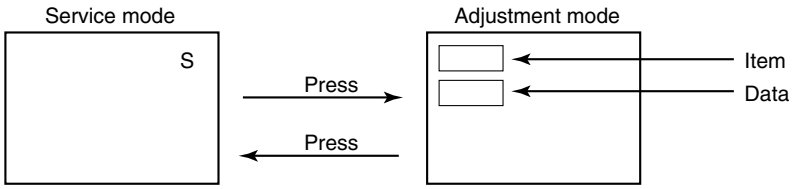
1. ENTERING TO SERVICE MODE

1) Press MUTE button twice on Remote Control.
2) Press MUTE button again to keep pressing.
3) While pressing the MUTE button, press MENU button on TV set.

(Service mode display)

2. DISPLAYING THE ADJUSTMENT MENU

1) Press MENU button on TV.



3. KEY FUNCTION IN THE SERVICE MODE

The following key entry during display of adjustment menu provides special functions.

Screen adjustment mode ON/OFF:	TV (ANT)/VIDEO button (on TV)
Selection of the adjustment items :	Channel ▲/▼ (on TV or Remote)
Change of the data value :	Volume ▲/▼ (on TV or Remote)
Adjustment menu mode ON/OFF :	MENU button (on TV)
Initialization of the memory (QA02) :	RECALL+Channel button on TV (▲)
Initialization of the self diagnostic data:	RECALL+Channel button on TV (▼)

“RCUT” selection :	1 button
“GCUT” selection :	2 button
“BCUT” selection :	3 button
“SCNT” selection :	4 button
“COLC” selection :	5 button
Convergence adj :	7 button
Self diagnostic display :	9 button

4. SELECTING THE ADJUSTING ITEMS

1) Every pressing of CHANNEL ▲ button in the service mode changes the adjustment items in the order of table-2. (▼ button for reverse order)

Refer to table-2 for preset data of adjustment mode.
(See SETTING & ADJUSTING DATA on page 20)

5. ADJUSTING THE DATA

1) Pressing of VOLUME ▲ or ▼ button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

6. EXIT FROM SERVICE MODE

1) Pressing POWER button to turn off the TV once.

■ INITIALIZATION OF MEMORY DATA OF QA02

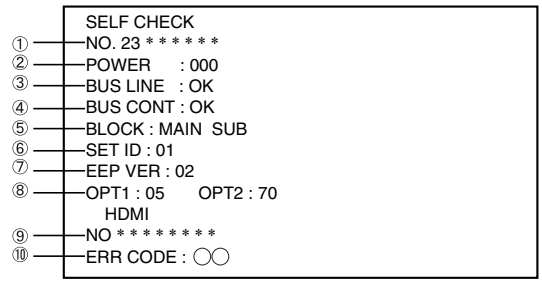
After replacing QA02, the following initialization is required.

1. Enter the service mode, then select any register item.
2. Press and hold the RECALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been complated.
3. Check the picture carefully. If necessary, adjust any adjustment item above. Perform “Programming Channel Memory” on the owner's manual.

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

7. SELF DIAGNOSTIC FUNCTION

1) Press “9” button on Remote Control during display of adjustment menu in the service mode. The diagnosis will begin to check if interface among IC’s are executed properly.
2) During diagnosis, the following displays are shown.

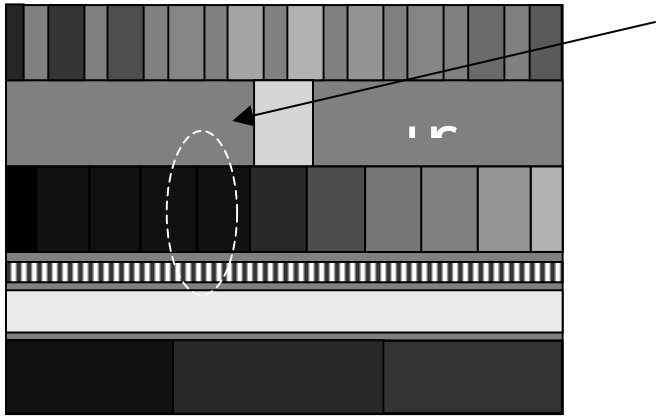

SELF CHECK
① NO. 23 * * * * * *
② POWER : 000
③ BUS LINE : OK
④ BUS CONT : OK
⑤ BLOCK : MAIN SUB
⑥ SET ID : 01
⑦ EEP VER : 02
⑧ OPT1 : 05 OPT2 : 70
HDMI
⑨ NO * * * * * * * *
⑩ ERR CODE : ○○

① Part number of microprocessor (QA01)
② Operation number of protection circuit (current limiter) . . . . “000” is normal.
③ BUS line check
- “OK” ..... Normal
- “SCL-GND” or “NG” ..... SCL-GND short circuit
- “SDA-GND” or “NG” ..... SDA-GND short circuit
- “SCL-SDA” or “NG” ..... SCL-SDA short circuit

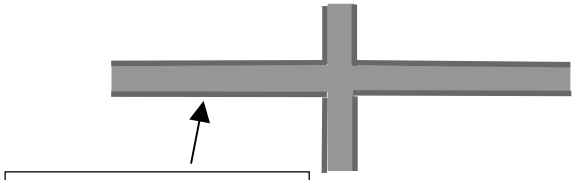
④ BUS line ACK (acknowledge) check
- “OK” ..... Normal
- Display of Location Number . . . . NG
- (Display example)
- “QA02 NG”, “H001 NG”, “Q501 NG” etc.
- Note: The indication of failure place is only one place though failure places are plural. When repair of a failure place finishes, the next failure place is indicated. (The order of priority of indication is left side.)

⑤ Sync. signal check
- Green display ..... Normal
- Red display ..... NG
  - MAIN ..... Main sync
  - SUB ..... Sub sync (when turn on the PIP)

⑥ ID code for TV Set
⑦ Version of "EEP"
⑧ Data for "OPT"
⑨ Part number of HDMI microprocessor
⑩ HDMI error code

ADJUSTING ITEM	PROCESS INSTRUCTIONS	SIGNAL	ADJUSTMENT SPECIFICATION
SCREEN ADJUST	1. Heart run minimum 15minutes. 2. Go into screen adjustment mode. Adjust Focus pack Screen VR of Red, Green, and Blue by looking directly into each CRT and adjusting each screen VR until CRT is just lit on left side of CRT.		
WHITE BARANCE ADJUSTMENT	1. Adjust white luster level to get 4.3cd/m2 on dark area, and get 264.3cd/m2 on bright area. 2. Using the data up and down keys, cycle through the adjustments for RED DRIVE, BLUE DRIVE, RED BIAS and BLUE BIAS. Adjust RED DRIVE, BLUE DRIVE for bright area, and adjust RED BIAS and BLUE BIAS for dark area. 3. Continue to make adjustments color temperature to spec on each area.	White luster signal (Valuable input level)	10500k+0UV Same spec is applied on dark area and bright area.
SUB-BRIGHT ADJUSTMENT	1. Receive channel 3 Sub-Bright pattern. 2. Go into BRTC of service mode. 3. Press DATA UP/DOWN to adjust Sub-Bright level to spec. 5th bar sunk 	CHANNEL 3 SUB-BRIGHT SIGNAL	5TH±1 BAR SUNK

FOCUS ADJUSTMENT (1/2)

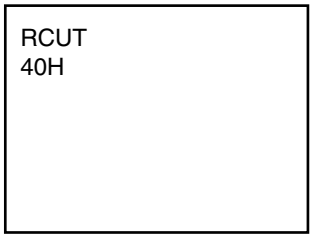
ITEM	ADJUSTMENT METHOD
Focus Adjustment	(Condition) • User Adjustment : SPORTS (CONTRAST MAX, BRIGHTNESS CENTER) • Adjust after Centering Magnet adjusts. • Signal : Lens Focus : R Dot cross (NTSC) G Dot cross (NTSC) B Dot cross (NTSC) Electrical Focus : R Dot cross (NTSC) G Dot cross (NTSC) B Dot cross (NTSC) (Adjustment) 1. Common Items 1) Rough Adjust the lens focus and electrical focus of each color(R, G, B). 2. Green Adjustment 1) Receive green single color by shielding jig. 2) Receive the Dot Cross pattern. 3) Adjust Green electrical focus. Adjust Green electrical focus VR on focus pack (Z410) for best center focus. If the focus blur on screen center and circumference, adjust the electrical focus is best point on all of screen. 4) Adjust Green lens focus. Receive the Dot Cross pattern. Adjust Green lens for best center focus. Green lens focus adjustment target Dot-cross has red flare (red flare width :1mm)  5) Repeat (3)~(4),and adjust best focus point.

FOCUS ADJUSTMENT (2/2)

ITEM	ADJUSTMENT METHOD
Focus Adjustment	3. Red Adjustment 1) Receive Red single color by shielding jig. 2) Receive the Dot Cross pattern. 3) Adjust Red electrical focus. Adjust Red electrical focus VR on focus pack (Z410) for best center focus. 4) Adjust Red lens focus. Receive the Dot Cross pattern. Adjust Red lens for best center focus. 5) Repeat (3)~(4),and adjust best focus point. 4. Blue Adjustment 1) Receive Blue single color by shielding jig. 2) Receive the Dot Cross pattern. 3) Adjust Blue electrical focus. Adjust Blue electrical focus VR on focus pack (Z410) for best center focus. (The Brightness is minimum point of Blue.) 4) Adjust Blue lens focus. Receive the Dot Cross pattern. Adjust the Blue lens for best center focus. After easy lens adjustment, turn to right side lens focus screw, and so dot-cross has flare. Next turn left focus screw, so flare disappears in Dot-Cross and Dot-Cross become blur. This point is blue lens focus adjustment target. (flare disappear and become blur)

CONVERGENCE ADJUSTMENT

1. Receive NTSC signal.
2. Enter to the service mode. (See Page 10.)



3. Press "7" button to enter the convergence adjusting mode, and the internal net pattern will be displayed. Then, press "9" button to display veritcal stripes.
4. Select the point and the color by pressing following buttons. (Cursor should be blinking.)
   "2", "8", "4", "6" : To select point
   "3" : To select color
5. Then press "5" button, and adjust the convergence by pressing following buttons. (Cursor should not be blingking.)
   "2", "8", "4", "6" : To adjust convergence
   "3" : To select color
6. Repeat from steps 3 to 4 until the convergence and the geometry become fine. (See Page 14.)
7. Press "7" button to memorize the adjusted data.
8. Message of "PLEASE PUSH TOUCH FOCUS" will be displayed, and press TOUCH FOCUS button which is located on the front panel.
9. TOUCH FOCUS CALIBRATION will start.
10. Soon message of "CALIBRATION FINISHED" will be displayed, and then a normal picture will be displayed.
11. Then push TOUCH FOCUS button again, and confirm that the convergence does not change.

Note: If message of "TOUCH FOCUS ERROR" is displayed,
1) Check the connection between four sensors and Convergence Unit.
2) Check the geometry of internal net pattern. (See Page 14.)

If any problem cannnot be found, hardware might have problem.

EXPLANATION OF KEY-FUNCTION IN THE CONVERGENCE ADJUSTMENT MODE

Load BACK UP DATA:	1 button
Up :	2 button
Selet Green color:	3 button
Left :	4 button
Blinking of cursor ON/OFF:	5 button
Right:	6 button
Adjust mode ON/OFF:	7 button
Down:	8 button
Vertical stripe ON/OFF	9 button
Erase Green line:	0 button
Erase Red line:	100 button
Erase Blue line:	ENT button

Note: The following message will appear while pressing "1" button.
ENTER: TO LOAD BACKUP DATA
MUTE: TO LOAD INITIAL DATA
EXIT: TO EXIT

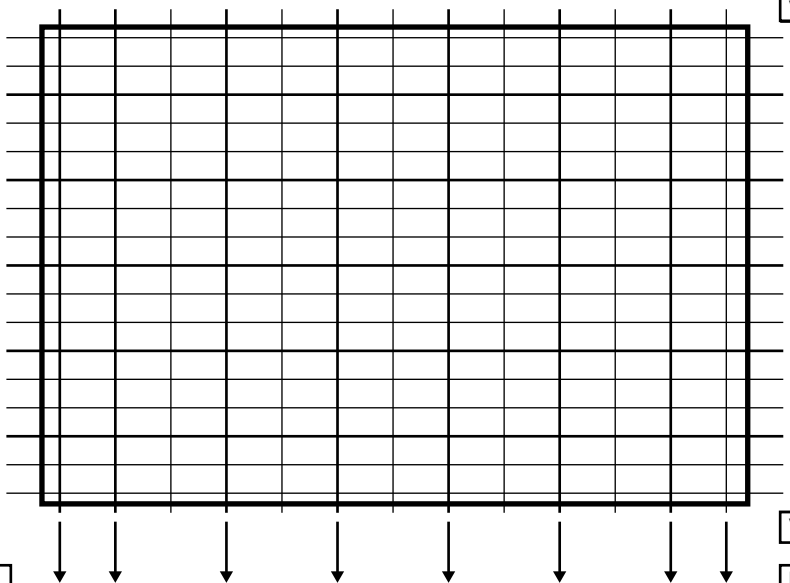
BACKUP DATA sets in factory by performing CALIBRATION. BACKUP DATA updates by performing CALIBRATION again. INITIAL DATA uses the seed data on this model. Thus, it cannot updates. INITIAL DATA is not adjusted. Therefore, convergence data operates incorrectly. Normally, BACKUP DATA operates as base data on this model. If BACKUP DATA is incorrectly operated, INITIAL DATA is operated instead of BACKUP DATA.

DEFRECTION and CONVERGENCE

ITEM	NAME	SETTING	INPUT SIGNAL	TEST POIN	MEASURING INSTRUMENT	ADJUSTMENT METHOD	ADJUSTMENT SPEC
VCEN	VERTICAL Raster centeing Adjustment	CONTRAST :MAX BRIGHTNESS:CNT COLOR :CNT TINT :CNT	Retma Signal	Between TP-G to TP-V	Digital Volt Meter	Adjust the vdtagebetwen TP-G and TP-V.	0±10 mV
DY Tilt Adjustment		CONTRAST: MAX BRIGHTNESS:CNT COLOR :CNT TINT :CNT PIC SIZE :FULL	D-Cross Pattern	Picture Adjustment	Picture Adjustment	After roughly the green centering magnet alignment, adjust the green yoke so that the D-cross is as close as possible to the dummy screen cross. Adjust the Red and Blue in the same manner as Green.	The dummy screen cross and D-cross Gap ± 5mm.
Centering magnet Adjustment		CONTRAST: MAX BRIGHTNESS:CNT COLOR :CNT TINT :CNT PIC SIZE :FULL	Retma Signal	Picture Adjustment	Picture Adjustment	Adjust the green center to the screen center with the centering magnet on Retma signal. And adjust the Red and Blue center to the green center each.	Color gap at the screen center is within ± 3mm.
WID	Horizontal Adjustment (FULL)	CONTRAST :MAX BRIGHTNESS:CNT COLOR :CNT TINT :CNT PIC SIZE : FULL C-MUTE :ON	Retma Signal	Picture Adjustment	Picture Adjustment	Adjust the Horizontal width by WID on the green raster only. After finishing Convergence adjustment, make sure that the width is the same as the spec.	11 ± 1 bar In case of C-MUTE OFF is the same spec as well.
HIT (VLIN)	Vertical Adjustment (FULL)	CONTRAST :MAX BRIGHTNESS: CNT COLOR :CNT TINT :CNT PIC SIZE : FULL C-MUTE : ON	Retma Signal	Picture Adjustment	Picture Adjustment	Adjust the Vertical height by HIT(VLIN) on the green raster only.After finishing Convergence adjustment, make sure that the height is the same as the spec with C-MUTE OFF.	In case of Convergence mute. Upper left...5 ± 0.5 bar Bottom right...5 ± 0.5 bar In case of C-MUTE OFF. Upper left...4 ± 0.5 bar Bottom right...4 ± 0.5bar.
Convergence			Retma Signal	Picture Adjustment	Picture Adjustment	Refer to the following (Convergence Net Geometry)	

CONVERGENCE (46 / 51 / 57 WIDE)

Net Pattern Geometry



Model	46WIDE	51WIDE	57WIDE
V size	572.850	635.085	708.750
	278.4	308.0	344.0
	208.8	231.0	258.0
	104.4	115.5	129.0
	0.0	0.0	0.0
	104.4	115.5	129.0
	208.8	231.0	258.0
	278.4	308.0	344.0
V span	34.8	38.5	43.0

Model	H size										H span
46WIDE	1018.4	485.0	404.1	242.5	80.8	0.0	80.8	242.5	404.1	485.0	80.8
51WIDE	1129.0	537.6	448.0	268.8	89.6	0.0	89.6	268.8	448.0	537.6	89.6
57WIDE	1260.0	600.0	500.0	300.0	100.0	0.0	100.0	300.0	500.0	600.0	100.0

UNIT: mm

NOTES

In many cases, color misconvergence may be corrected by returning HIT and WID data in main deflection side to initial adjusting values. Following cases will surely require readjustment of convergence.

CRT REPLACEMENT

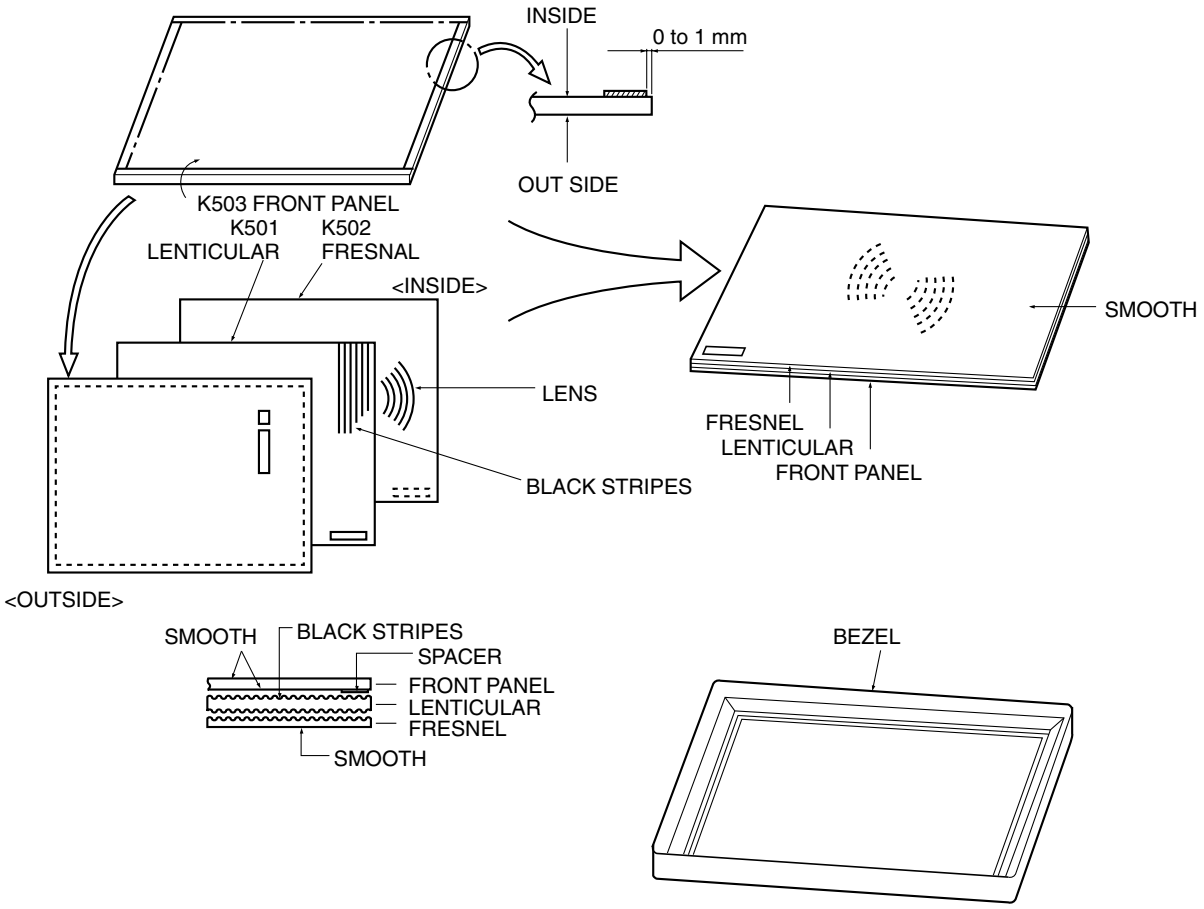
When CRT is replaced, main deflection readjustment and color matching are required.
Perform following procedures.

1. Replace two CRT's of blue and red.
2. Perform horizontal adjustment for blue and red yokes on base of green CRT data. Mount yoke and velocity mod. coil alignment, pushing towards CRT without gap.
3. Adjust alignment of blue and red. (Refer Alignment adjustment for details.)
4. Rotating centering magnet, adjust CRT centers of red and blue to CRT center of green.
   (Picture position adjustment)
5. Adjust HIT and WID data of main deflection, and decide data at the most precise screen comparing to green data.
6. Adjust convergence of screen picture for color matching. Do not move green one at this time.
7. After convergence adjustment of screen picture finishes, replace green CRT.
   For green CRT as well, repeat steps 2 to 5 above on bases of red and blue color matching to adjust convergence.
8. Execute TOUCH FOCUS following instructions displayed on the screen after finishing convergence adjustments of all the colors.
   Note: Press button "7" again after "PLEASE PUSH TOUCH FOCUS" has been displayed. Then, TOUCH FOCUS will not be executed, and the current state of convergence will be displayed.

SCREEN AND MIRROR ALIGNMENTS

ASSEMBLING OF FRONT SCREEN

MOUNTING OF FRONT SCREEN



CAUTION : Do not hold the optical system parts (lens and mirror) with bare hand to avoid finger-prints on the surface of those parts.

HOW TO CLEAN LENS AND MIRROR

1. Be sure to remove sand dust with an air brush, etc.
2. When it is stained slightly, breathe upon it and wipe away with the specified cleaning cloth.
   For other stains than the above, wipe the stains away with the specified cloth into which a cleaning liquid has been soaked.

Cleaning liquid..... **LENS LUSTER** (Manufactured by Edmund Scientific Co.), etc.

HOW TO CLEAN SCREEN

When cleaning the screen, use a soft cloth so as not to damage the screen.

1. Wipe the screen with a dry cloth to remove moisture on the screen.

Note : Absolutely do not use detergent, water, alcohol, benzine, thinner, etc. for cleaning in order not to wipe away the black print on the surface.

CIRCUIT CHECKS

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. Checking should be done following the steps below.

1. Connect an accurate high voltage meter to the anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST to minimum (zero beam current).
3. High voltage must be measured below (B) kV.
   Refer to table-1 for high voltage (B).
   (See SETTING & ADJUSTING DATA on page 20)
4. Vary the BRIGHTNESS to both extremes to be sure the high voltage does not exceed the limit under any conditions.

CAUTION:

When the following parts fail, check the High Voltage after replacing.

Location No.	Name	Descriptions
		51", 57"
T461	Flyback	TFB3094AD
C440	Capacitor	1000pF, ±3%
C443	Capacitor	4700pF, ±3%
C444	Capacitor	3600pF, ±3%
C467	Capacitor	5600pF, ±5%
C468	Capacitor	6800pF, ±5%

ANODE VOLTAGE MEASURING METHOD

CAUTION: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (CRT DRIVE assembly, DEFLECTION assembly, and POWER SUPPLY assembly).

1. Disconnect the FBT anode cable as outlined below. Measure high voltage at the point where the cable enters the FBT.
2. Holding the rubber cover firmly, turn it counterclockwise and check that the lock has been disengaged. (See Fig. b on page 9.)
3. Determine the extent of the rubber cover before disconnecting the cable.
4. Pull straight up the anode cable to disconnect.
5. When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

FS CIRCUIT CHECK

The Fail Safe (FS) circuit check is indispensable for the final check in servicing. Checking should be done following the steps below.

1. Turn the receiver on.
2. Temporarily short TP- (R) and TP- (X) on the DEF/POWER Board with a jumper wire.
   Raster and sound will disappear.
3. The receiver must remain in this state even after removing the jumper wire. This is the evidence that the FS circuit is functioning properly.
4. To obtain a picture again, temporarily turn the receiver off and allow the FS circuit more than 5 seconds to reset. Then turn the receiver on to produce a normal picture.

CHAPTER 2 SPECIFIC INFORMATIONS

SETTING & ADJUSTING DATA

【SAFETY INSTRUCTIONS】

		51", 57"
HIGH VOLTAGE AT ZERO BEAM:	(A)	32.8 kV
MAX HIGH VOLTAGE:	(B)	33.9 kV

Table-1

【SERVICE MODE】

ADJUSTING ITEMS AND DATA IN THE SERVICE MODE:

Item	Name of adjustment	Preset	Data
RCUT	R CUT OFF	80H	←
GCUT	G CUT OFF	80H	←
BCUT	B CUT OFF	80H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
BRTC	BRIGHT CENTER	80H	←
HIT	PICTURE HIT	30H	←
LIN	V LINEARITY	12H	←
VSC	V S CORRECTION	29H	←

Item	Name of adjustment	Preset	Data
WID	PICTURE WIDTH	48H	←
COLC	COLOR CENTER	4BH	←
VCP	V COMPENSATION	06H	←
PARA	EW PARABOLA	0FH	←
CNR	EW M CORRECTION	10H	←
HCP	H COMPENSATION	00H	←
VFC	V f CORRECTION	00H	←
VCEN	V CENTERRING	7AH	←
TVOP	TV OPTION	40H	←

Table-2

【CIRCUIT CHECKS】

HIGH VOLTAGE DET	Q306 #⑧pin-GND	9.0 V

Table-3

【DESIGN MODE】

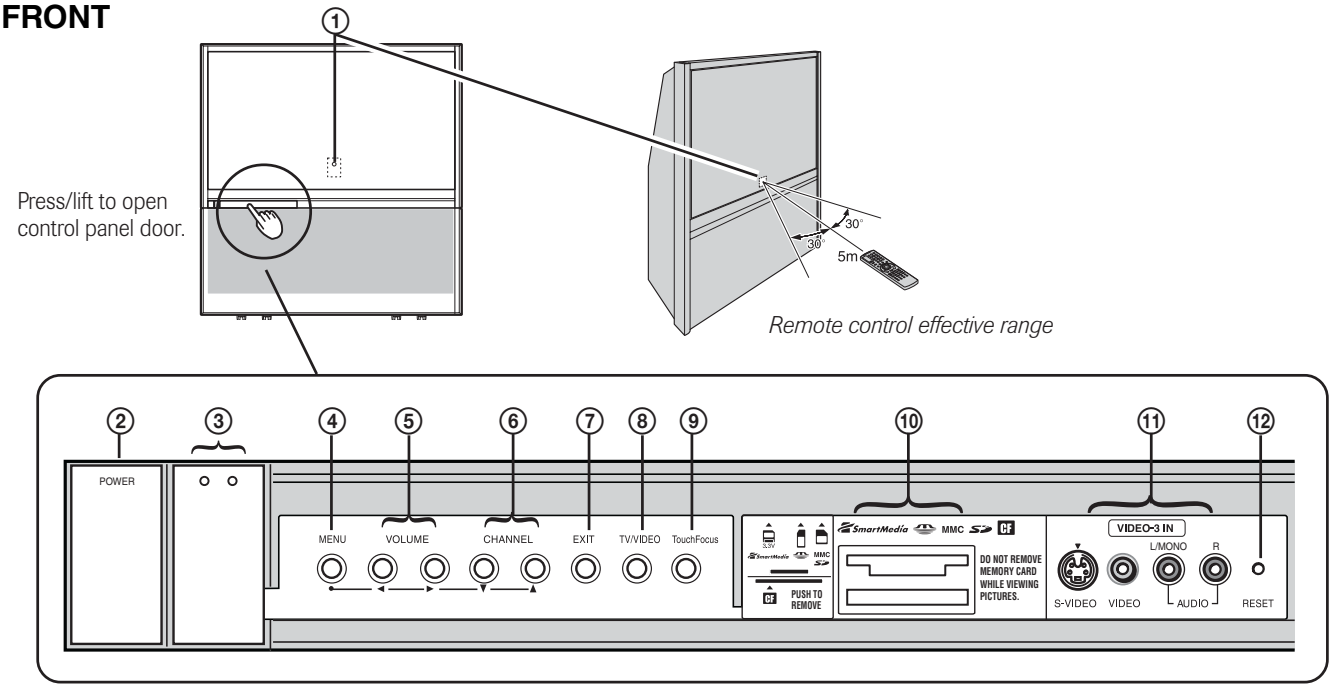
ADJUSTING ITEMS AND DATAS IN THE DESIGN MODE:

Item	Name of adjustment	Preset Data	51", 57"	Remarks
OPT0	TV SET OPTION 0	0CH	←	
OPT1	TV SET OPTION 1	80H	←	

Table-4

LOCATION OF CONROLS

FRONT



① **Remote control sensor** *(behind the screen)* — Point the remote control toward this area of the TV screen.

② **POWER** — Press to turn the TV on and off.

③ **Red and Green LEDs** — When green lights solid (not blinking), it indicates that the TV power cord is plugged in and the power is OFF. This is called standby mode.

NOTE: *When you first plug in the power cord, the green LED will blink 3 times. After approximately 30 seconds, the green LED will light continuously, at which point you can press POWER to turn ON the TV.*

When red lights solid (not blinking), it indicates that the TV power cord is plugged in and the POWER is ON.

④ **MENU** — Press to access the menu system. When a menu is on-screen or the TV Guide On Screen program guide is open, this button functions as the ENTER button.

⑤ **VOLUME ◀▶** — When no menu is on-screen, these buttons adjust the volume level. When a menu is on-screen, these buttons function as left/right menu navigation buttons.

⑥ **CHANNEL ▲▼** — When no menu is on-screen, these buttons change the channel (programmed channels only. When a menu is on-screen, these buttons function as up/down menu navigation buttons.

⑦ **EXIT** — Press to close an on-screen menu instantly.

⑧ **TV/VIDEO** — Repeatedly press to change the source you are viewing (ANT 1, ANT 2, VIDEO 1, VIDEO 2, VIDEO 3, HDMI, ColorStream HD1, ColorStream HD2).

⑨ **TouchFocus®** — Press to automatically adjust the color convergence.

⑩ **Memory card slots** — Insert a memory card (SD, SmartMedia,™ MMC, Memory Stick,™ CompactFlash®) into one of the memory card slots to view JPEG files (such as photos) as a "slide show" on your TV.

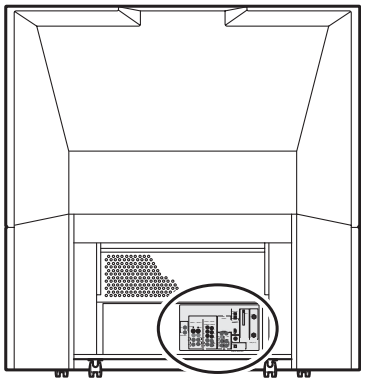
⑪ **VIDEO-3** — The front panel A/V connections are referred to as "VIDEO 3" and include standard A/V connections plus optional S-video. (The VIDEO 1 and VIDEO 2 A/V connections are on the TV's back panel.)

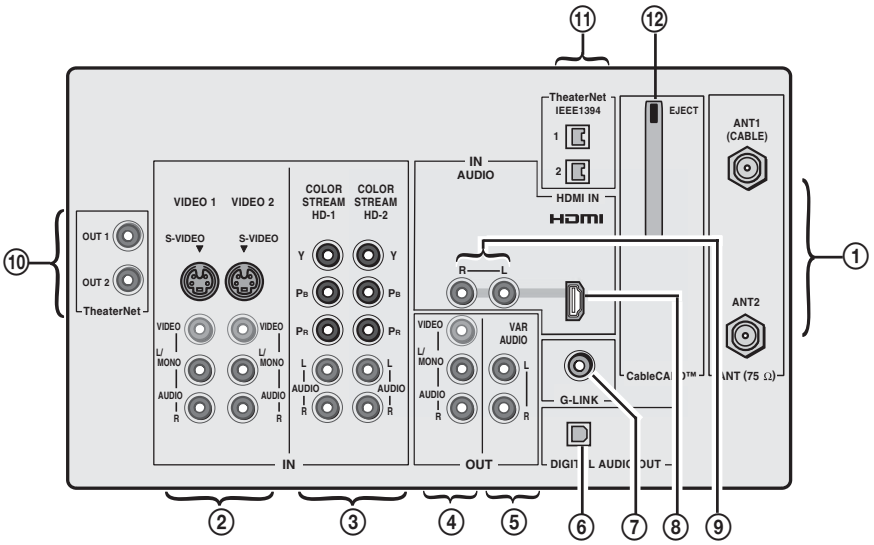
⑫ **RESET** — If the TV stops responding to the controls on the remote control or TV front panel and you cannot turn off the TV, press this button to reset the TV.

NOTE: *The RESET button is recessed, so you will need to use the end of a paper clip or similar object to press the button.*

BACK

For an explanation of cable types.





① **ANT-1 (CABLE) IN** and **ANT-2 IN** — Two inputs that support analog (NTSC) and digital (ATSC) off-air antenna signals and analog and digital (QAM) Cable TV signals.

Note: *If you have an antenna only, connect it to ANT-1. If you have both Cable TV and an antenna, connect the Cable TV to ANT-1 and the antenna to ANT-2.*

② **VIDEO 1 IN** and **VIDEO 2 IN** — Two sets of standard (composite) video and standard audio inputs plus optional S-video inputs for connecting devices with composite video or S-video output.

NOTE: *Standard (composite) video and S-video cables carry only video information; separate audio cables are required for a complete connection.*

③ **ColorStream® HD-1** and **ColorStream® HD-2** — Two sets of ColorStream® high-definition component video and standard stereo audio inputs for connecting devices with component video output, such as a Toshiba DVD player with ColorStream.®

Note: *Component video cables carry only video information; separate audio cables are required for a complete connection.*

④ **A/V OUT** — Standard composite video and analog audio outputs for connecting a VCR for editing and dubbing.

⑤ **Variable Audio OUT** — Standard analog audio outputs for connecting an analog amplifier with external speakers.

⑥ **Digital Audio OUT** — Optical audio output in Dolby Digital or PCM (pulse-code modulation) format for connecting an external Dolby Digital decoder, amplifier, AV receiver, or home theater system with optical audio input.

⑦ **G-LINK™** — For use with one of the enclosed IR blaster/G-LINK cables to enable the TV Guide On Screen® recording features.

⑧ **HDMI™ IN** — High-Definition Multimedia Interface input receives digital audio and uncompressed digital video from an HDMI device or uncompressed digital video from a DVI device.

NOTE: NEVER CONNECT THIS TV TO A PERSONAL COMPUTER (PC). *This TV is not intended for use with a PC.*

⑨ **Standard Audio IN** — For use when connecting a DVI device with analog audio output to the HDMI input.

⑩ **TheaterNet™ (IR) OUT** — For controlling infrared remote-controlled devices through the TV. You can connect up to two devices with either one of the enclosed IR blaster cables, and then control the devices using the TV's IR pass-through or TheaterNet™ (on-screen device control) features.

⑪ **IEEE-1394** — Two bi-directional digital IEEE-1394 ports for connecting multiple devices with compressed digital video. Because these ports are bi-directional, they can be used for playback and recording. You can control your IEEE-1394 devices using the TV's TheaterNet on-screen control icons.

NOTE:

- *IEEE-1394 cable carries both audio and video information; no separate audio cables are required for a complete connection.*
- ***NEVER CONNECT THIS TV TO A PERSONAL COMPUTER (PC).*** *This TV is not intended for use with a PC.*

⑫ **CableCARD™ slot** — For use with a digital security card and digital Cable TV service (provided by your local Cable operator) to view encrypted digital programming.

HDMI, the HDMI logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC.

CableCARD is a trademark of Cable Television Laboratories, Inc.

REMOTE CONTROL

POWER turns the TV on and off.

SLEEP accesses the sleep timer.

LIGHT The first press of the LIGHT button lights the keypad and turns on the Illumination mode. With the Illumination mode on, pressing any other key lights the keypad for 5 seconds (10 seconds if you're in programming mode). Subsequent presses of the LIGHT button toggle between turning the Illumination mode on and off.

Channel Numbers (0–9, –/100) directly tune channels. The "–" button is used to tune digital channels.

INPUT selects the video input source.

MODE cycles through the six device modes: TV, CBL/SAT, VCR/PVR, DVD, AUDIO1, and AUDIO2. The mode indicator light will remain lit for a few seconds.

PIC SIZE cycles through the five pictures sizes: Natural, TheaterWide 1/2/3, and Full.

TheaterNet DEVICE displays a list of available TheaterNet devices.

TheaterNet CTRL accesses the on-screen IR device control icons.

MENU accesses the menu system.

TV GUIDE opens the TV Guide On Screen system (Chapter 7).

INFO provides detailed information on highlighted items in the TV Guide On Screen system (Chapter 7).

ENTER activates highlighted items in the main menu system and the TV Guide On Screen system.

Arrow buttons (▲▼◄►) select or adjust programming menus.

CH ▲▼ cycles through programmed channels when no menu is on-screen (41); functions as page up/down when a menu is on-screen or when the TV Guide On Screen system is open (Chapter 7).

VOL ▲▼ adjusts the volume level.

EXIT closes on-screen menus and the TV Guide On Screen system.

CH RTN returns to the last viewed channel, or stops the picture viewer slide show.

Live returns viewing of the TV back to the live program, while continuing to record to the Toshiba Symbio™ AVHD.

RECALL displays TV setting information on-screen.

MUTE reduces or turns off the sound.

TV/VCR selects TV mode to view one program while recording another.

SKIP/SEARCH ▶▶| and **|◀◀** jump forward and backward one day in the TV Guide On Screen listings (Chapter 7).

LIST displays the Toshiba Symbio™ AVHD play list (if available).

FAV CH ▲▼ tunes to the next higher/lower favorite channel.

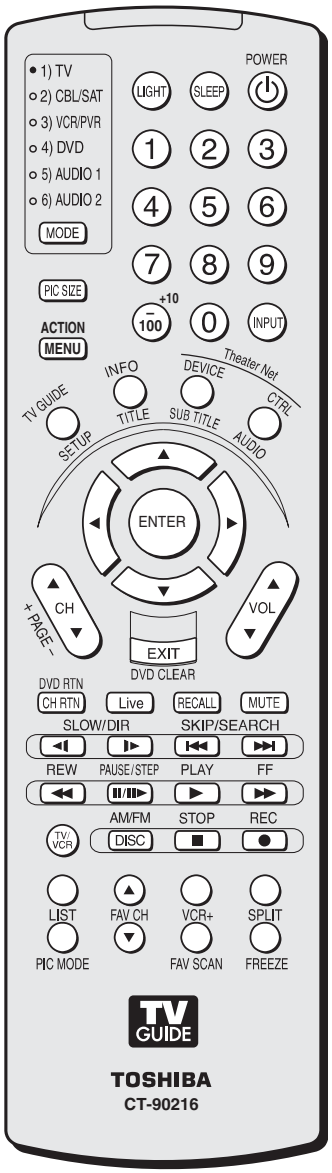
VCR+ accesses the TV Guide On Screen manual recording function.

SPLIT turns the POP feature on and off.

PIC MODE selects the picture mode.

FAV SCAN accesses the favorite channel search function.

FREEZE freezes the main picture in the double-window.



Note:

The error message "Not Available" will appear if you press a key for a function that is not available.

PRGRAMMING CHANNELS INTO THE TV's CHANNEL MEMORY

When you press CHANNEL ▲ or ▼ on the remote control or TV front panel, your TV will stop only on the channels stored in the TV's channel memory.

Follow the steps below to program channels into the TV's channel memory.

Programming channels automatically

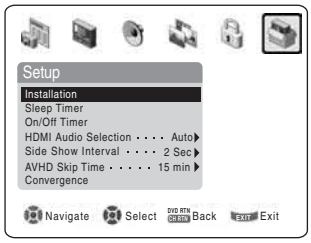
Your TV can automatically detect all active channels in your area and store them in its memory. After the channels are programmed automatically, you can manually add or erase individual channels.

Note:

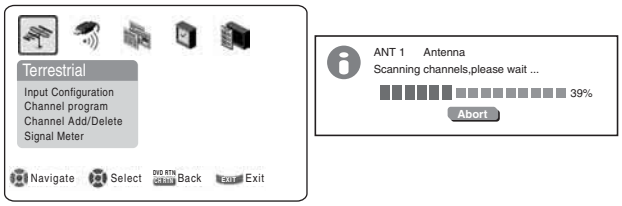
- *You must configure the antenna input sources before programming channels.*
- *The automatic channel programming process does NOT erase channels that were previously programmed into the TV's memory, but adds newly found channels to the existing set of programmed channels. To remove a channel from the memory, you must manually delete it .*
- *To tune the TV to a channel not programmed in the channel memory, you must use the Channel Number buttons on the remote control.*
- *Programming channels for an antenna input configured for CABLE will take substantially longer than for an antenna input configured for ANTENNA. This is normal; however, once channel programming is completed, you should not have to repeat the programming process again unless your Cable TV service lineup changes significantly.*
- *If you have a CableCARD inserted , channel programming for ANT 1 is disabled because the CableCARD automatically loads the Cable channel list in the TV's channel memory.*

To program channels automatically:

1. Make sure you have configured the antenna input sources.
2. Press MENU and open the SETUP menu.
3. Highlight INSTALLATION and press ENTER. (A new set of INSTALLATION menu icons will appear on-screen.



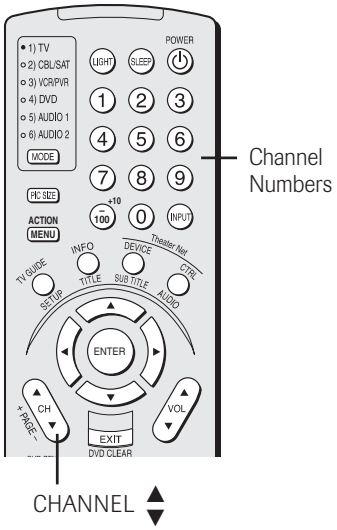
4. Open the TERRESTRIAL menu, highlight CHANNEL PROGRAM, and press ENTER.
5. Highlight ANT 1 or ANT 2, depending on which antenna input you want to program channels for, and then press ENTER to start automatic channel programming.



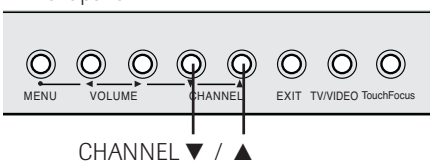
The TV will automatically cycle through all the channels for the antenna input you selected, and store all active channels in the channel memory. While the TV is cycling through the channels, the message "Scanning channels, please wait" appears (as shown above right).

To cancel channel programming, either press EXIT or highlight ABORT in the on-screen display and press ENTER.

6. When channel programming is done, press CHANNEL ▲ or ▼ to view the programmed channels.



TV front panel

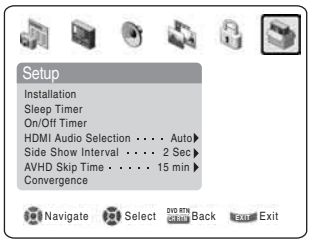


Manually adding and deleting channels in the channel memory

After you have programmed the channels automatically, you can manually add or delete individual channels in the channel memory.

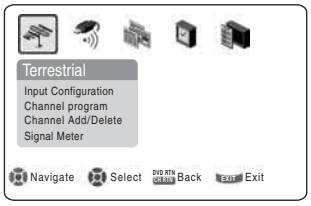
To add or delete channels in the channel memory:

1. Press MENU and open the SETUP menu.
2. Highlight INSTALLATION and press ENTER. (A new set of INSTALLATION menu icons will appear on-screen, as shown in step 3).

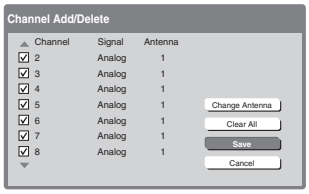


3. Open the TERRESTRIAL menu, highlight CHANNEL ADD/DELETE, and then press ENTER.

   Note: *If you have a cable box connected to ANT 1 during TV Guide On Screen setup, the TERRESTRIAL menu will not be accessible and you must then use the TV Guide On Screen channel editor to add/delete channels.*



4. The illustration below shows channels programmed for the ANT 1 antenna input. To view the list of channels programmed for the ANT 2 antenna input, highlight CHANGE ANTENNA and press ENTER.



To add a channel to the channel memory:

Highlight the unchecked box next to the channel number you want to add, and then press ENTER to check the box.

To manually add digital subchannels on a physical channel:

Use the Channel Numbers and the Dash (–/100) on the remote control to enter the channel number (for example, 56–1).

If the channel is found, the number will be added to the list and the box will be checked.

If the channel is not found, a message will appear.

To remove a channel from the channel memory:

Highlight the checked box next to the channel number you want to remove, and then press ENTER to uncheck the box.

To save your new settings:

Highlight SAVE and press ENTER.

To revert to your original settings:

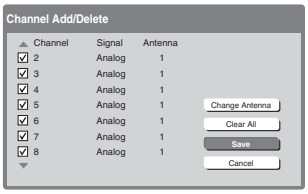
Highlight CANCEL and press ENTER before saving.

To remove all channels from the channel memory:

Highlight CLEAR ALL and press ENTER, and then highlight SAVE and press ENTER.

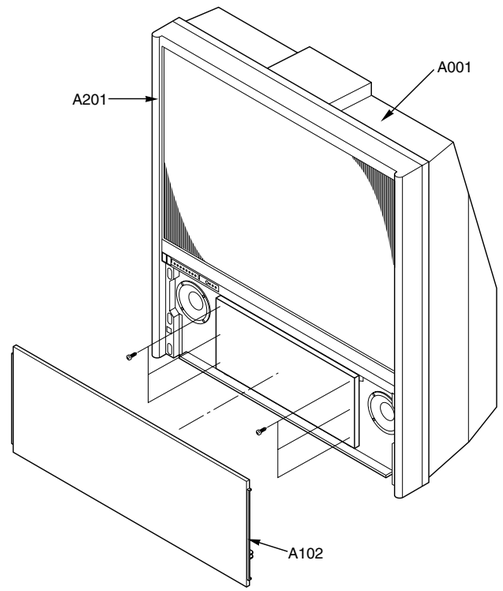
Note:

- *This action applies to the current antenna input only. To delete/add channels on the other input, highlight CHANGE ANTENNA and press ENTER.*
- *This action cannot be cancelled unless you highlight CANCEL and press ENTER before saving your changes.*

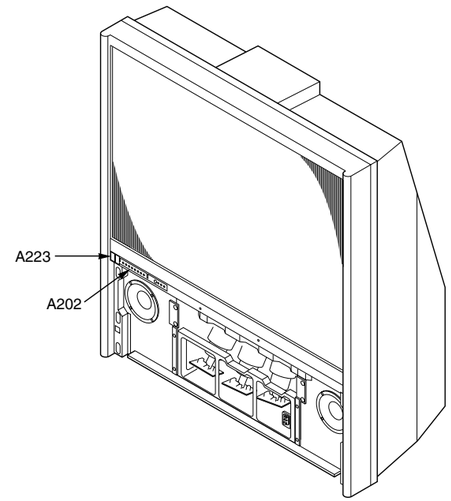


MECHANICAL DISASSEMBLY

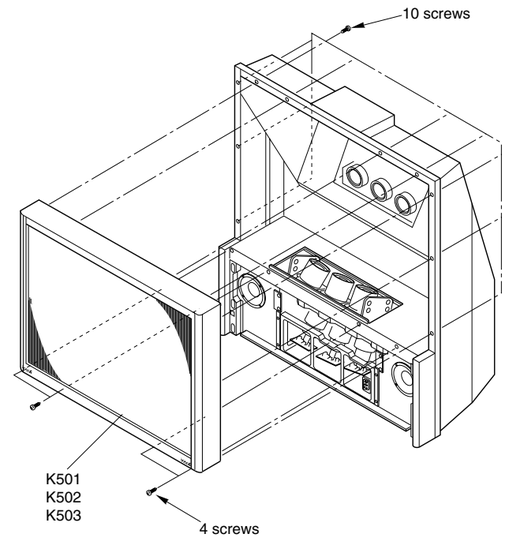
1 Speaker Grille Removal



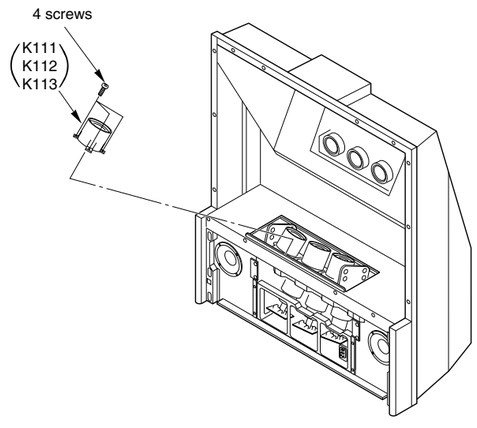
2 Control Panel Removal



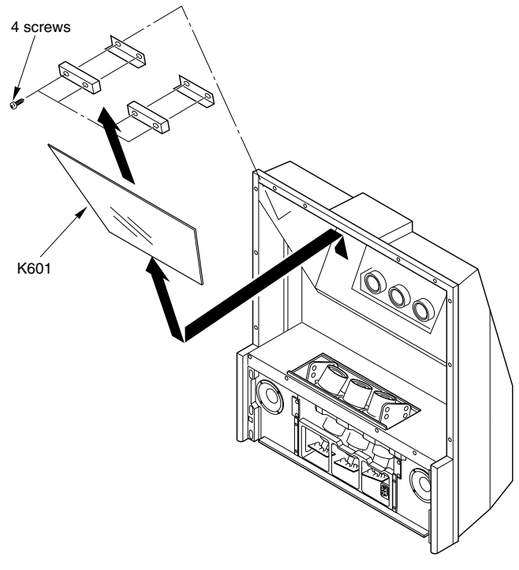
3 Front Mask Removal



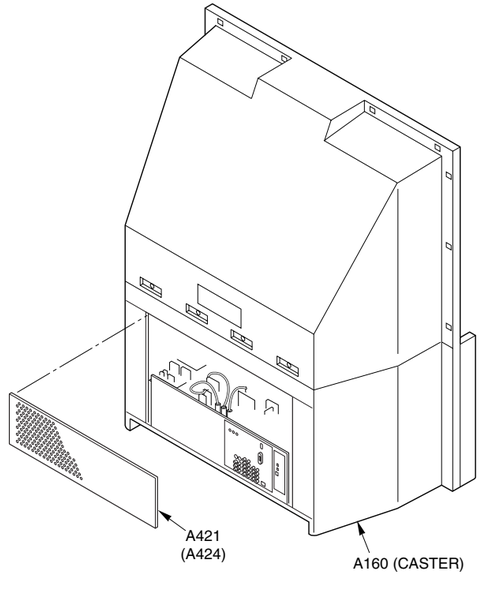
4 Shield Plate, Lens Removal



5 Mirror Removal



6 Back Board Removal



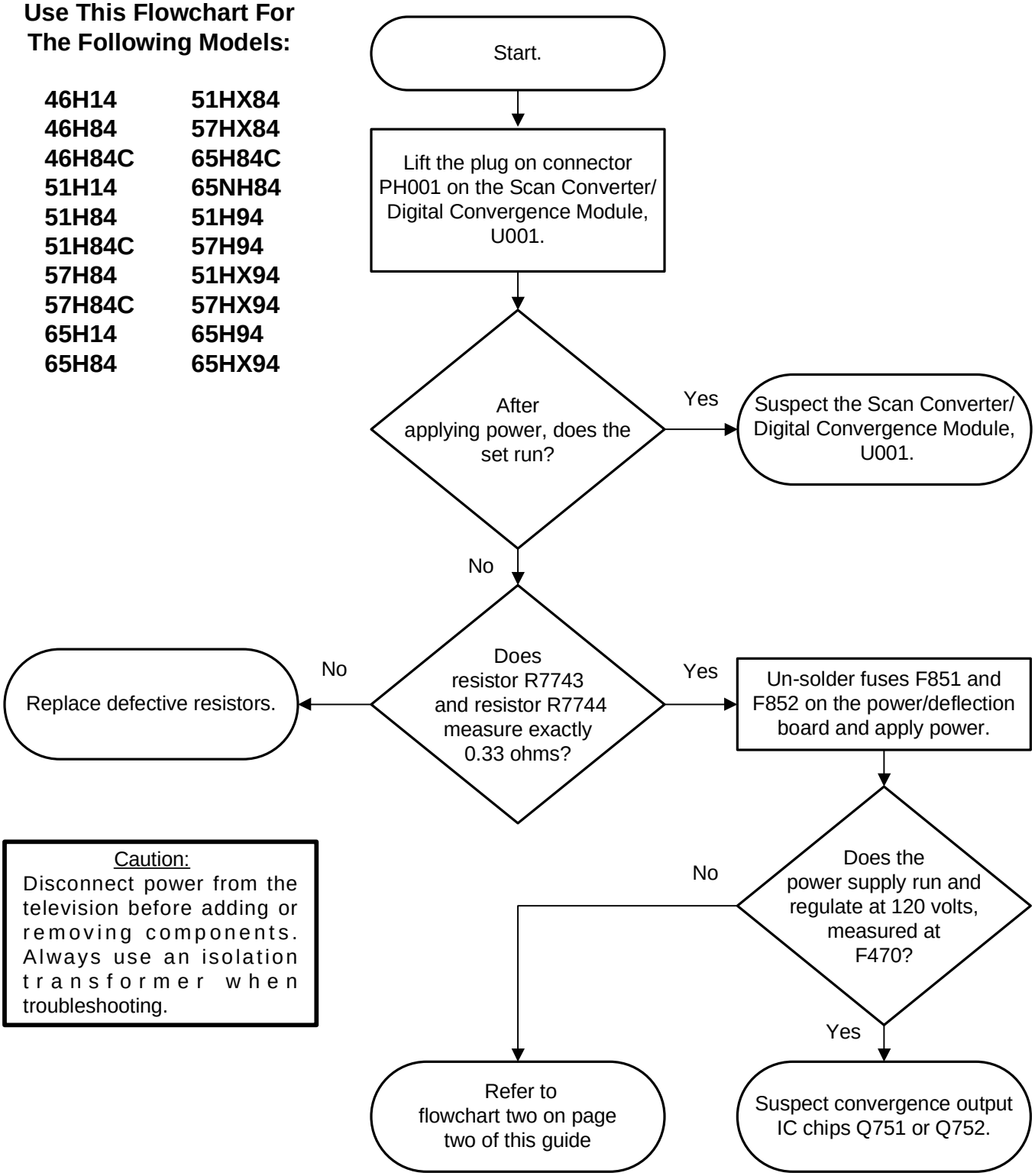
Shutdown Troubleshooting Guide

2004 HDTV Projection Models

Flowchart One

Use This Flowchart For The Following Models:

46H14	**51HX84**
46H84	**57HX84**
46H84C	**65H84C**
51H14	**65NH84**
51H84	**51H94**
51H84C	**57H94**
57H84	**51HX94**
57H84C	**57HX94**
65H14	**65H94**
65H84	**65HX94**


Start.
Lift the plug on connector PH001 on the Scan Converter/ Digital Convergence Module, U001.
After applying power, does the set run?
Yes
Suspect the Scan Converter/ Digital Convergence Module, U001.
No
Does resistor R7743 and resistor R7744 measure exactly 0.33 ohms?
No
Replace defective resistors.
Yes
Un-solder fuses F851 and F852 on the power/deflection board and apply power.
Does the power supply run and regulate at 120 volts, measured at F470?
No
Refer to flowchart two on page two of this guide
Yes
Suspect convergence output IC chips Q751 or Q752.

Caution:
Disconnect power from the television before adding or removing components. Always use an isolation transformer when troubleshooting.

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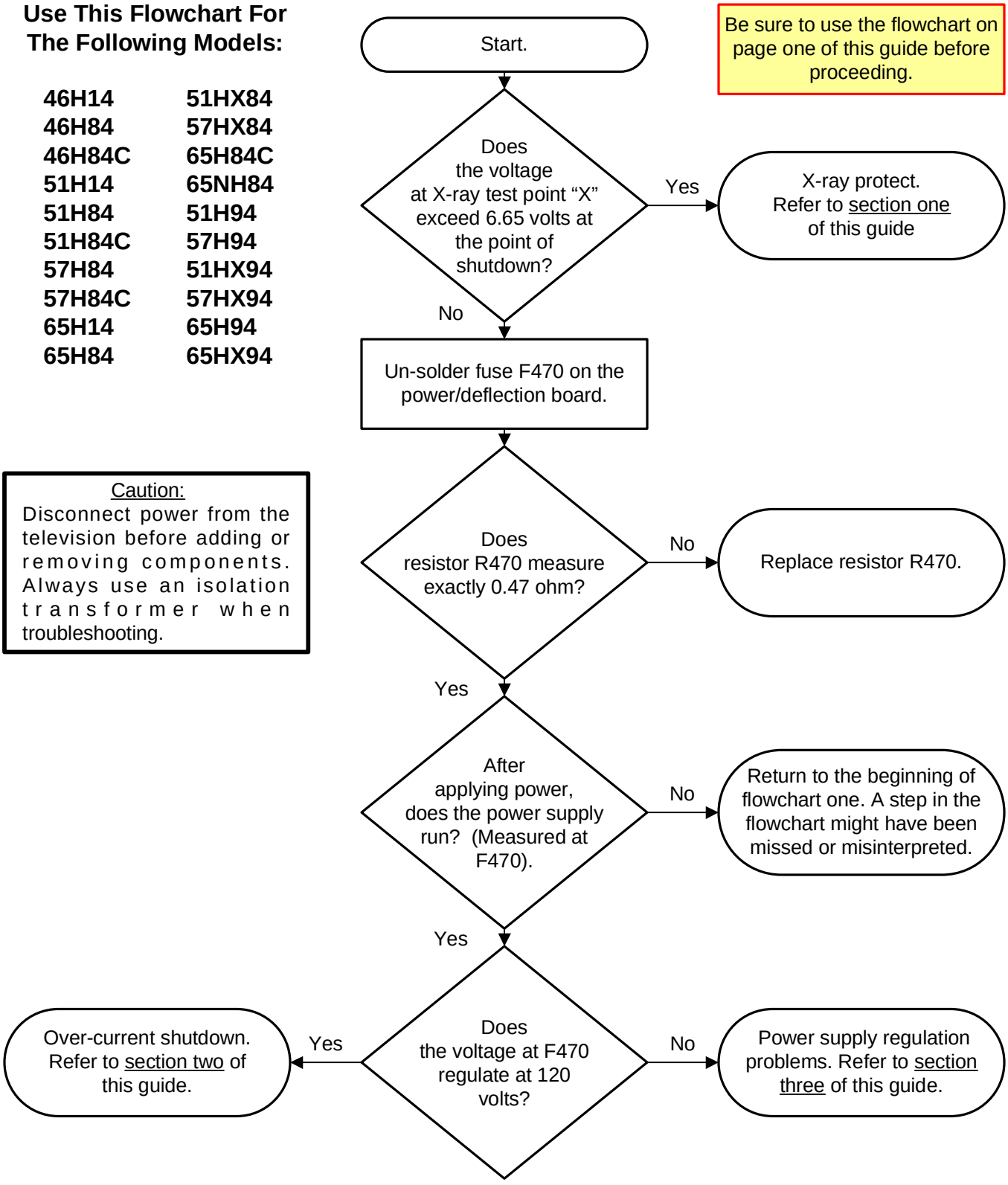
Flowchart Two

Use This Flowchart For The Following Models:

46H14	**51HX84**
46H84	**57HX84**
46H84C	**65H84C**
51H14	**65NH84**
51H84	**51H94**
51H84C	**57H94**
57H84	**51HX94**
57H84C	**57HX94**
65H14	**65H94**
65H84	**65HX94**

Be sure to use the flowchart on page one of this guide before proceeding.


Start.
Does the voltage at X-ray test point "X" exceed 6.65 volts at the point of shutdown?
Yes
X-ray protect. Refer to section one of this guide
No
Un-solder fuse F470 on the power/deflection board.
Does resistor R470 measure exactly 0.47 ohm?
No
Replace resistor R470.
Yes
After applying power, does the power supply run? (Measured at F470).
No
Return to the beginning of flowchart one. A step in the flowchart might have been missed or misinterpreted.
Yes
Does the voltage at F470 regulate at 120 volts?
Yes
Over-current shutdown. Refer to section two of this guide.
No
Power supply regulation problems. Refer to section three of this guide.

Caution:
Disconnect power from the television before adding or removing components. Always use an isolation transformer when troubleshooting.

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Protective shutdown in these models will be indicated by the power relay disengaging and the red power LED blinking at a half second rate. The power cord must then be unplugged and plugged back in to restore operation. The purpose of this guide is to help narrow the cause of the shutdown to a single section or circuit. Refer to the correct service manual for additional information.

The voltage test points indicated in this guide should be measured with a peak-response meter or an oscilloscope set to DC input. If a peak-response (or min-max meter) is used, set the sampling time to one millisecond. A higher sampling time could cause errors. Do not use a normal digital meter because the sampling time will be too long. Since you are attempting to measure the peak voltage just at the point of shutdown, a normal digital meter might not give correct readings.

Section One: **X-ray protection**. The high voltage is sampled at the reference pin of the CR block, Z450 (at the white wire). This voltage passes through the blue CRT board and is applied to pin 4 of connector P404 on the DEF/POW board. From there it goes to pin 10 of Q306 and exits at pin 8. Q306 is a quad op amp that is used for current buffering. The sampled voltage is then applied to the emitter of Q408 and on to Q409. If the voltage at the emitter of Q408 exceeds the reference voltage across D490, Q408 and Q409 will be turned on. This will cause the circuit of Q471, Q472 and Q473 to latch the set into shutdown.
For X-ray shutdown suspect the following components: T461, Z450, C440, C443, C444, deflection yokes and other components in the horizontal output section.

Section Two: **Over-current shutdown**. Transistor Q470 and resistor R470 are part of the over-current sensing circuit for the horizontal output section. The current for the horizontal output transistor passes through R470. The base to emitter junction of Q470 monitors the voltage drop across R470. If the current draw of the horizontal output circuit increases, the voltage drop across R470 will increase. Shutdown will occur when this voltage drop exceeds 1.5 volts. (This voltage is very difficult to measure reliably. Since the voltage is measured across the resistor and neither side of the meter is at ground potential, voltages induced into the meter leads affect the measurement).
Measure the voltage at resistor R474 on the power/deflection board. Take this measurement on the end of the resistor toward the rear of the set. If this voltage exceeds **13.2 volts** at the point of shutdown, then the set is going into over-current shutdown.
For over-current shutdown, suspect components in the horizontal deflection area such as: Q404, D461, T461, C440, C443, C444, etc.

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Section three: **Power supply regulation.** Problems with the main power supply regulation can cause the secondary voltages to go too high. If the secondary supply voltage to the horizontal output section rises above 120 volts, the output transistor will draw excessive current and indirectly cause an over-current shutdown.
For main power supply regulation problems, suspect components such as: Q801, Q862, Q881, D880, etc.

Major Parts List:

Model	Red CRT	Green CRT	Blue CRT	Scan Converter Bd.
46H14	23078432	23078430	23078431	23148103
46H84	23078432	23078430	23078431	23148103
46H84C	23078360	23078358	23078359	23148103
51H14	23078357	23078358	23078359	23148103
51H84	23078357	23078358	23078359	23148103
51H84C	23078357	23078358	23078359	23148103
51H94	23078429	23078430	23078431	23148111
51HX84	23078357	23078358	23078359	23148103
51HX94	23078357	23078358	23078359	23148111
57H84	23078433	23078430	23078434	23148103
57H84C	23078361	23078358	23078362	23148103
57H94	23078361	23078358	23078362	23148111
57HX84	23078361	23078358	23078362	23148103
57HX94	23078361	23078358	23078362	23148111
65H14	23079126	23079128	23879128	23148103
65H84	23078363	23078358	23078364	23148103
65NH84	23079126	23079127	23079128	23148103

These parts are common to all models:

Anode Lead	23192972	**R470**	24322478
Deflection Yoke	23231390	**R7743**	24322338
T461, Flyback	23236816	**R7744**	24322338
Z450	24083014	**F470**	23144624
Q404	23205149	**F851**	23144714
Q751	23135048	**F852**	23144714
Q752	23135048		

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CHASSIS AND CABINET REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate com-ponents which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE. Do not degrade the safety of the receiver through improper servicing.

NOTICE:
- *The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.*
- *The PC board assembly with * mark is no longer available after the end of the production.*

Model : 51H94/57H94

Capacitors	CD	:	Ceramic Disk	PF	:	Plastic Film	EL	: Electrolytic
Resistors	CF	:	Carbon Film	CC	:	Carbon Composition	MF	: Metal Film
	OMF	:	Oxide Metal Film	VR	:	Variable Resistor	FR	: Fusible Resistor

(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Parts No.	Description
[#1:51H94]		
[#2:57H94]		
CAPACITORS		
C101	24797339	ELECTROLYTIO CE04G, 50V 3.3UF M
C102	24665221	ELECTROLYTIC CE04Q, 10V 220UF M 3A
C105	24100102	CERAMIC CHIP, 50V F 1000PF Z
C106	24669479	ELECTROLYTIC, 50V 4.7UF M 3A
C107	24666221	ELECTROLYTIC 04Q, 16V 220UF M 3A
C108	24665221	ELECTROLYTIC CE04Q, 10V 220UF M 3A
C109	24100104	CERAMIC CHIP, 25V F 0.1UF Z
C110	24794101	ELECTROLYTIC, 16V 100UF M
C221	24503041	PLASTIC FILM , 63V 0.1UF J
C301	24503053	PLASTIC FILM, 63V 1UF J
C302	24669010	ELECTROLYTIC, 50V 1UF M 3A
C303	24503053	PLASTIC FILM, 63V 1UF J
C308	24567223	PLASTIC FILM, 50V 0.022UF J
C309	24109102	CERAMIC CHIP, 50V B 1000PF K
C310	24073053	ELECTROLYTIC, 25V 100UF M 3A
C311	24109103	CERAMIC CHIP, 50V B 0.01UF K
C312	24109332	CERAMIC CHIP, 50V B 3300PF K
C314	24503037	MT PLA CAP 63V 0.047UF J
C315	24073020	ELECTROLYTIC, 10V 1000UF M 3A
C320	24669101	ELECTROLYTIC, 50V 100UF M 3A
C321	24669101	ELECTROLYTIC, 50V 100UF M 3A
C323	24109473	CERAMIC CHIP, 25V B 0.047UF K
C324	24503053	PLASTIC FILM, 63V 1UF J
C325	24082057	PLASTIC FILM, 100V 0.22UF J
C327	24092730	CERAMIC CHIP, 16V B 0.1UF K
C328	24082256	PLASTIC FILM, 100V 2200PF J
C330	24073034	ELECTROLYTIC, 16V 10UF M 3A
C332	24669101	ELECTROLYTIC, 50V 100UF M 3A
C333	24082272	PLASTIC FILM, 100V 0.047UF J
C334	24109471	CERAMIC CHIP, 50V B 470PF K
C338	24666100	ELECTROLYTIC, 10V 10UF M 3A
C340	24073037	ELECTROLYTIC, 16V 47UF M 3A
C361	24092730	CERAMIC CHIP, 16V B 0.1UF K
C362	24109473	CERAMIC CHIP, 25V B 0.047UF K
C370	24669229	ELECTROLYTIC, 50V 2.2UF M 3A
C371	24092730	CERAMIC CHIP, 16V B 0.1UF K
C401	24214332	CERAMIC DISC, 500V B 3300PF K

Location No.	Parts No.	Description
C402	24214391	CERAMIC DISC, 500V B 390PF K
C405	24503041	PLASTIC FILM , 63V 0.1UF J
C412	24828124	PLASTIC FILM, 200V 0.12UF J
C415	24092484	CERAMIC DISC, 2KV B 1500PF K
C416	24676220	ELECTROLYTIC, 04Q 100V 22UF M 3A
C417	24503334	PLASTIC FILM CF92 T 250V 1R5UF J
C419	24105331	CERAMIC CHIP, 50V CH 330PF J
C420	24503041	PLASTIC FILM , 63V 0.1UF J
C422	24109102	CERAMIC CHIP, 50V B 1000PF K
⚠ C423	24503252	PLASTIC FILM, 400V 0.3UF J
⚠ C425	24503142	PLASTIC FILM, 400V 0.27UF J
C426	24211222	CERAMIC DISC, 2KV B 2200PFK
C432	24567333	PLASTIC FILM, 50V 33000PF J
⚠ C440	24503059	PLASTIC FILM, 1800VH 1000PF H
⚠ C443	24503099	PLASTIC FILM, 1800VH 4700PF H
⚠ C444	24503347	PLASTIC FILM, 1800VH 3600PF H
C445	24828473	PLASTIC FILM, 200V 0.047UF J
C446	24073120	ELECTRPLYTIC, 250V 33UF, 250YXF33M
C448	24073118	ELECTROLYTIC, 160V 33UF M
C449	24214221	CERAMIC DISC, 500V B 220PF K
C450	24073057	ELECTROLYTIC, 25V 1000UF M 3A
C460	24678220	ELECTROLYTIC, 200V 22UF M
C463	24109682	CERAMIC CHIP, 50V B 6800PF K
C464	24503149	PLASTIC FILM, 250V 3.3UF
⚠ C467	24820562	PLASTIC FILM, 630V 5600PF J
⚠ C468	24820682	PLASTIC FILM, 630V 6800PF J
C473	24092730	CERAMIC CHIP, 16V B 0.1UF K
C481	24092784	CERAMIC CHIP CK83B 10V 0.33UF K
C482	24109822	CERAMIC CHIP, 50V B 8200PF K
C483	24105470	CERAMIC CHIP, 50V CH 47PF J
C490	24073037	ELECTROLYTIC, 16V 47UF M 3A
C491	24666100	ELECTROLYTIC, 10V 10UF M 3A
C496	24503049	PLASTIC FILM, 63V 0.47UF J
C497	24085022	ELEC. NONPOLAR CE04R 16V 100UF M NP 3A
C499	24666220	ELECTROLYTIC, 16V 22UF M 3A
C601	24109681	CERAMIC CHIP, 50V B 680PF K
C602	24109681	CERAMIC CHIP, 50V B 680PF K
C603	24073084	ELECTROLYTIC, 50V 4.7UF M 3A
C604	24073084	ELECTROLYTIC, 50V 4.7UF M 3A
C605	24073084	ELECTROLYTIC, 50V 4.7UF M 3A
C606	24073084	ELECTROLYTIC, 50V 4.7UF M 3A

Location No.	Parts No.	Description
C607	24073053	ELECTROLYTIC, 25V 100UF M 3A
C608	24073086	ELECTROLYTIC, 50V 10UF M 3A
C612	24073039	ELECTROLYTIC, 16V 220UF M 3A
C661	24073084	ELECTROLYTIC, 50V 4.7UF M 3A
C662	24073086	ELECTROLYTIC, 50V 10UF M 3A
C663	24073086	ELECTROLYTIC, 50V 10UF M 3A
C665	24109103	CERAMIC CHIP, 50V B 0.01UF K
C666	24073084	ELECTROLYTIC, 50V 4.7UF M 3A
C667	24794100	ELECTROLYTIC, 16V 10UF M
C680	24073073	ELECTROLYTIC, 35V 2200UF M 3A
C681	24109103	CERAMIC CHIP, 50V B 0.01UF K
C682	24073082	ELECTROLYTIC, 50V 2.2UF M 3A
C683	24795101	ELECTROLYTIC, 25V 100UF M
C684	24795470	ELECTROLYTIC 04G, 25V 47UF M
⚠ C801	24503004	PLASTIC FILM, AC275V 0.47UF M
C805	24092281	CERAMIC DISC, AC250V E 4700PF
C809	24086067	ELECTROLYTIC 692Q 200V 1000UF M 3F
C810	24086067	ELECTROLYTIC 692Q 200V 1000UF M 3F
⚠ C811	24092595	CERAMIC DISC, AC250V E 2200PF M
⚠ C812	24092595	CERAMIC DISC, AC250V E 2200PF M
C849	24073038	ELECTROLYTIC, 16V 100UF M 3A
C850	24073187	ELECTROLYTIC CE04P 35V 560UF M 3A
C851	24073187	ELECTROLYTIC CE04P 35V 560UF M 3A
C852	24073169	ELECTROLYTIC CE04P 25V 470UF M 3A
C853	24073169	ELECTROLYTIC CE04P 25V 470UF M 3A
C854	24667470	ELECTROLYTIC CE04Q, 25V 47UF M 3A
C860	24214103	CERAMIC DISC, 500V B 0.01UF K
C862	24092341	CERAMIC DISC, 2KV R 470PF K
C863	24503045	PLASTIC FILM, 63V 0.22UF J
C866	24503053	PLASTIC FILM, 63V 1UF J
C867	24591472	PLASTIC FILM, 50V 4700PF J
C868	24669470	ELECTROLYTIC, 50V 47UF M 3A
C869	24678229	ELECTROLYTIC, 200V 2.2UF M 3A
C870	24503565	PLASTIC FILM CQ32 T 800V 100000PF H
C871	24092343	CERAMIC DISC, 2KV 680PF K
C873	24503045	PLASTIC FILM, 63V 0.22UF J
C874	24092337	CERAMIC DISC, 2KV 220PF K
C876	24503049	PLASTIC FILM, 63V 0.47UF J
C877	24092344	CERAMIC DISC, 2KV 820PF K
C879	24214102	CERAMIC DISC, 500V B 1000PF K
C880	24092339	CERAMIC DISC, 2KV 330PF K
C881	24092339	CERAMIC DISC, 2KV 330PF K
C884	24086916	ELECTROLYTIC, 160V 330UF M 3D
C885	24668102	ELECTROLYTIC, 35V 1000UF M 3A
C888	24503045	PLASTIC FILM, 63V 0.22UF J
C891	24073155	ELECTROLYTIC CE04P 16V 1000UF M 3A
C898	24092730	CERAMIC CHIP, 16V B 0.1UF K
C901	24211102	CERAMIC DISC, 2KV B 1000PF K
C902	24794101	ELECTROLYTIC, 16V 100UF M
C903	24232103	CERAMIC DISC, 50V F 0.01UF Z
C904	24109471	CERAMIC CHIP, 50V B 470PF K
C906	24679220	ELECTROLYTIC, 250V 22UF M 3A
C907	24214101	CERAMIC DISC, 500V B 100PF K
C911	24211102	CERAMIC DISC, 2KV B 1000PF K
C912	24794101	ELECTROLYTIC, 16V 100UF M
C913	24232103	CERAMIC DISC, 50V F 0.01UF Z
C914	24109471	CERAMIC CHIP, 50V B 470PF K
C915	24679220	ELECTROLYTIC, 250V 22UF M 3A
C917	24214101	CERAMIC DISC, 500V B 100PF K
C921	24211102	CERAMIC DISC, 2KV B 1000PF K
C922	24794101	ELECTROLYTIC, 16V 100UF M
C923	24109471	CERAMIC CHIP, 50V B 470PF K
C924	24232103	CERAMIC DISC, 50V F 0.01UF Z
C925	24679220	ELECTROLYTIC, 250V 22UF M 3A
C926	24214101	CERAMIC DISC, 500V B 100PF K
C934	24092731	CERAMIC CHIP, 16V B 1UF K

Location No.	Parts No.	Description
C944	24092731	CERAMIC CHIP, 16V B 1UF K
C954	24092731	CERAMIC CHIP, 16V B 1UF K
C961	24763101	ELECTROLYTIC, 16V 100UF M
C962	24203100	ELECTORLYTIC, 16V 10UF M 7L 3A
C4430	24073034	ELECTROLYTIC, 16V 10UF M 3A
C7101	24797470	ELECTROLYTIC 04G, 50V 47UF M
C7102	24109103	CERAMIC CHIP, 50V B 0.01UF K
C7103	24206479	ELECTROLYTIC, 50V 4.7UF M 7L 3A
C7104	24108330	CERAMIC CHIP, 50V SL 33PF J
C7105	24092730	CERAMIC CHIP, 16V B 0.1UF K
C7106	24797470	ELECTROLYTIC 04G, 50V 47UF M
C7107	24790470	ELECTROLYTIC, 160V 47UF M
C7108	24214472	CERAMIC DISC, 500V B 4700PF K
C7109	24214472	CERAMIC DISC, 500V B 4700PF K
C7110	24666470	ELECTORLYTIC, 16V 47UF M 3A
C7111	24666470	ELECTORLYTIC, 16V 47UF M 3A
C7112	24435560	CERAMIC DISC, 500V SL 56PF J
C7113	24790100	ELECTROLYTIC, 160V 10UF M
C7114	24092730	CERAMIC CHIP, 16V B 0.1UF K
C7701	24503047	PLASTIC FILM, 63V 0.33UF J
C7704	24073053	ELECTROLYTIC, 25V 100UF M 3A
C7705	24073037	ELECTROLYTIC, 16V 47UF M 3A
C7706	24503047	PLASTIC FILM, 63V 0.33UF J
C7722	24105331	CERAMIC CHIP, 50V CH 330PF J
C7724	24073091	ELECTROLYTIC, 50V 220UF M 3A
C7725	24073091	ELECTROLYTIC, 50V 220UF M 3A
C7727	24105331	CERAMIC CHIP, 50V CH 330PF J
C7730	24105331	CERAMIC CHIP, 50V CH 330PF J
C7733	24105331	CERAMIC CHIP, 50V CH 330PF J
C7735	24073091	ELECTROLYTIC, 50V 220UF M 3A
C7736	24073091	ELECTROLYTIC, 50V 220UF M 3A
C7738	24105331	CERAMIC CHIP, 50V CH 330PF J
C7741	24105331	CERAMIC CHIP, 50V CH 330PF J
C7750	24073015	ELECTROLYTIC, 10V 47UF M 3A
C7751	24073089	ELECTROLYTIC, 50V 47UF M 3A
C7752	24073089	ELECTROLYTIC, 50V 47UF M 3A
C7753	24073093	ELECTROLYTIC, 50V 470UF M 3A
C7761	24073015	ELECTROLYTIC, 10V 47UF M 3A
C7762	24073015	ELECTROLYTIC, 10V 47UF M 3A
C7765	24667220	ELECTROLYTIC, 25V 22UF M 3A
C7784	24667220	ELECTROLYTIC, 25V 22UF M 3A
C7785	24092730	CERAMIC CHIP, 16V B 0.1UF K
C7786	24092730	CERAMIC CHIP, 16V B 0.1UF K
C7800	24666220	ELECTROLYTIC, 16V 22UF M 3A
CB01	24794470	ELECTROLYTIC, 16V 47UF M
CB51	24590103	PLASTIC FILM, 50V 0.01UF J
CB52	24794470	ELECTROLYTIC, 16V 47UF M
CB53	24503041	PLASTIC FILM , 63V 0.1UF J
CB54	24436221	CERAMIC DISC, 50V SL 220PF J
CB55	24797010	ELECTROLYTIC, 50V 1UF M
CB56	24794470	ELECTROLYTIC, 16V 47UF M
CB58	24794470	ELECTROLYTIC, 16V 47UF M
CB59	24590103	PLASTIC FILM, 50V 0.01UF J
CB60	24794100	ELECTROLYTIC, 16V 10UF M
CB61	24503041	PLASTIC FILM , 63V 0.1UF J
CB504	24794100	ELECTROLYTIC, 16V 10UF M
CB505	24092398	CERAMIC DISC, 25V 0.1UF Z
CC01	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC02	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC03	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC04	24619100	ELECTROLYTIC, 16V 10UF M
CC05	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC06	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC07	24619100	ELECTROLYTIC, 16V 10UF M
CC08	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC09	24092730	CERAMIC CHIP, 16V B 0.1UF K

Location No.	Parts No.	Description
CC10	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC11	24619100	ELECTROLYTIC, 16V 10UF M
CC12	24092538	CERAMIC CHIP, 10V F 1UF Z
CC13	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC14	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC15	24619100	ELECTROLYTIC, 16V 10UF M
CC16	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC17	24619100	ELECTROLYTIC, 16V 10UF M
CC18	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC19	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC20	24619100	ELECTROLYTIC, 16V 10UF M
CC22	24092538	CERAMIC CHIP, 10V F 1UF Z
CC24	24092538	CERAMIC CHIP, 10V F 1UF Z
CC25	24092538	CERAMIC CHIP, 10V F 1UF Z
CC26	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC27	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC28	24619102	ELECTROLYTIC, 16V 47UF M
CC30	24619100	ELECTROLYTIC, 16V 10UF M
CC31	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC32	24619100	ELECTROLYTIC, 16V 10UF M
CC33	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC34	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC35	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC36	24619100	ELECTROLYTIC, 16V 10UF M
CC40	24092538	CERAMIC CHIP, 10V F 1UF Z
CC41	24092730	CERAMIC CHIP, 16V B 0.1UF K
CC42	24109103	CERAMIC CHIP, 50V B 0.01UF K
⚠ CE01	24503002	PLASTIC FILM, AC275V 0.22UF M
CE04	24092281	CERAMIC DISC, AC250V E 4700PF
CE05	24092281	CERAMIC DISC, AC250V E 4700PF
⚠ CE07	24092565	CERAMIC DISC, AC250V B 470PF K
⚠ CE08	24092565	CERAMIC DISC, AC250V B 470PF K
⚠ CE09	24092565	CERAMIC DISC, AC250V B 470PF K
CE10	24073217	ELECTROLYTIC 692Q 200V 560UF M
CE11	24591332	PLASTIC FILM, 50V 3300PF J
CE12	24073053	ELECTROLYTIC, 25V 100UF M 3A
CE13	24503213	PLASTIC FILM CF92 T 1500VH 1500PF H
CE14	24591471	PLASTIC FILM, 50V 470PF J
CE15	24092339	CERAMIC DISC, 2KV 330PF K
CE16	24212102	CERAMIC DISC, 50V B 1000PF K
CE17	24503041	PLASTIC FILM , 63V 0.1UF J
CE43	24503041	PLASTIC FILM , 63V 0.1UF J
CE50	24676100	ELECTROLYTIC CE04Q, 100V 10UF M 3A
CE51	24073155	ELECTROLYTIC CE04P 16V 1000UF M 3A
CE52	24503041	PLASTIC FILM , 63V 0.1UF J
CE53	24214221	CERAMIC DISC, 500V B 220PF K
CE54	24503041	PLASTIC FILM , 63V 0.1UF J
CE55	24617006	ELECTROLYTIC 04CH, 25V 820UF M
CE56	24665221	ELECTROLYTIC CE04Q, 10V 220UF M 3A
CE57	24073038	ELECTROLYTIC, 16V 100UF M 3A
CE58	24073038	ELECTROLYTIC, 16V 100UF M 3A
CE59	24666331	ELECTROLYTIC 04Q, 16V 330UF M 3A
CE61	24073020	ELECTROLYTIC, 10V 1000UF M 3A
CE63	24666470	ELECTORLYTIC, 16V 47UF M 3A
CE64	24567334	PLASTIC FILM, 50V 0.33UF J
CE65	24666470	ELECTORLYTIC, 16V 47UF M 3A
CE66	24666470	ELECTORLYTIC, 16V 47UF M 3A
CE67	24567334	PLASTIC FILM, 50V 0.33UF J
CE68	24073017	ELECTROLYTIC, 10V 220UF M 3A
CE69	24669339	ELECTROLYTIC, 50V 3.3UF M
CE71	24214331	CERAMIC DISC, 500V B 330PF K
CE72	24214331	CERAMIC DISC, 500V B 330PF K
CE73	24214331	CERAMIC DISC, 500V B 330PF K
CE74	24214331	CERAMIC DISC, 500V B 330PF K
CE75	24214331	CERAMIC DISC, 500V B 330PF K
CE76	24214331	CERAMIC DISC, 500V B 330PF K

Location No.	Parts No.	Description
CE79	24669220	ELECTROLYTIC, 04Q 50V 22UF M 3A
CE80	24073157	ELECTROLYTIC CE04P 16V 1500UF M 3A
CE81	24073157	ELECTROLYTIC CE04P 16V 1500UF M 3A
CE82	24676470	ELECTROLYTIC, 100V 47UF M 3A
CE83	24073155	ELECTROLYTIC CE04P 16V 1000UF M 3A
CE84	24073141	ELECTROLYTIC CE04P 10V 1000UF M 3A
CE85	24073158	ELECTROLYTIC CE04P 16V 2200UF M 3A
CE86	24073133	ELECTROLYTIC CE04P 6.3V 3300UF M 3A
CE87	24073141	ELECTROLYTIC CE04P 10V 1000UF M 3A
CE88	24073155	ELECTROLYTIC CE04P 16V 1000UF M 3A
CF01	24073152	ELECTROLYTIC CE04P 16V 330UF M 3A
CV14	24212102	CERAMIC DISC, 50V B 1000PF K
CV27	24762471	ELECTROLYTIC, 04G 10V 470UF M
CV29	24763101	ELECTROLYTIC, 16V 100UF M
CV30	24232103	CERAMIC DISC, 50V F 0.01UF Z
CV38	24212102	CERAMIC DISC, 50V B 1000PF K
CV39	24212102	CERAMIC DISC, 50V B 1000PF K
RESISTORS		
R150	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R153	24366101	CARBON FILM, 1/6W 100 OHM J
R240	24367153	CARBON FILM, 1/6W 15K OHM G
R241	24367183	CARBON FILM, 1/6W 18K OHM G
R242	24367183	CARBON FILM, 1/6W 18K OHM G
R243	24367273	CARBON FILM, 1/6W 27K OHM G
R244	24366124	CARBON FILM, 1/6W 120K OHM J
R245	24366472	CARBON FILM, 1/6W 4.7K OHM J
R246	24366472	CARBON FILM, 1/6W 4.7K OHM J
R247	24366102	CARBON FILM, 1/6W 1K OHM J
R249	24366104	CARBON FILM, 1/6W 100K OHM J
R264	24366750	CARBON FILM, 1/6W 75 OHM J
R265	24366750	CARBON FILM, 1/6W 75 OHM J
R266	24366750	CARBON FILM, 1/6W 75 OHM J
R286	24366750	CARBON FILM, 1/6W 75 OHM J
R287	24366750	CARBON FILM, 1/6W 75 OHM J
R288	24366750	CARBON FILM, 1/6W 75 OHM J
R302	24366101	CARBON FILM, 1/6W 100 OHM J
R305	24322109	OXIDE METAL FILM, 1W 1 OHM J
R306	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R307	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R308	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R311	24366563	CARBON FILM, 1/6W 56K OHM J
R312	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
R313	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R314	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R315	24011681	CHIP, METAL FILM, 1/20W 680 OHM J
R321	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R322	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R325	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R330	24000633	METAL FILM, 1/4W 10K OHM F
R331	24000633	METAL FILM, 1/4W 10K OHM F
R334	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R335	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R336	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R337	24321129	OXIDE METAL FILM, 1/2W 1.2 OHM J
R338	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R340	24366103	CARBON FILM, 1/6W 10K OHM J
R341	24011183	CHIP, METAL FILM, 1/20W 18K OHM J
R343	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R344	24382151	OXIDE METAL FILM, 1W 150 OHM J
R345	24000445	CHIP JUMPER, 1608TYPE
R346	24382391	OXIDE METAL FILM, 1W 390 OHM J
R348	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R349	24011392	CHIP, 1/20W 3.9K OHM J
R350	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
R355	24366103	CARBON FILM, 1/6W 10K OHM J

Location No.	Parts No.	Description
R360	24011562	CHIP, METAL FILM, 1/20W 5.6K OHM J
R361	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R362	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R363	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R364	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
R365	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R366	24366222	CARBON FILM, 1/6W 2.2K OHM J
R367	24011392	CHIP, 1/20W 3.9K OHM J
R369	24366103	CARBON FILM, 1/6W 10K OHM J
R370	24366102	CARBON FILM, 1/6W 1K OHM J
R371	24011823	CHIP, METAL FILM, 1/20W 82K OHM J
R372	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R373	24011823	CHIP, METAL FILM, 1/20W 82K OHM J
R374	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R375	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R376	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R378	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R390	24382561	OXIDE METAL FILM, 1W 560 OHM J
R391	24382561	OXIDE METAL FILM, 1W 560 OHM J
R392	24382561	OXIDE METAL FILM, 1W 560 OHM J
R403	24553101	OXIDE METAL FILM, 1W 100 OHM J
R404	24011182	CHIP, METAL FILM, 1/20W 1.8K OHM J
R405	24366101	CARBON FILM, 1/6W 100 OHM J
R406	24382682	OXIDE METAL FILM, 1W 6.8K OHM J
R407	24381100	OXIDE METAL FILM, 1/2W 10 OHM J
R409	24555220	OXIDE METAL FILM, 3W 22 OHM J
R410	24555220	OXIDE METAL FILM, 3W 22 OHM J
R411	24323229	OXIDE METAL FILM, 2W 2.2 OHM J
R412	24383153	OXIDE METAL FILM, 2W 15K OHM J
R413	24366101	CARBON FILM, 1/6W 100 OHM J
R414	24019259	FUSIBLE, 1/4W 27 OHM G
R415	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R416	24383151	OXIDE METAL FILM, 2W 150 OHM J
R417	24366222	CARBON FILM, 1/6W 2.2K OHM J
R418	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R419	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R420	24366103	CARBON FILM, 1/6W 10K OHM J
R421	24366223	CARBON FILM, 1/6W 22K OHM J
R422	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R423	24942102	CARBON COMPOSITION, 1/2W 1K OHM J
R424	24376104	CARBON FILM, 1/2W 10OK OHM J
R425	24376104	CARBON FILM, 1/2W 10OK OHM J
R426	24366101	CARBON FILM, 1/6W 100 OHM J
R427	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R428	24377224	CARBON FILM, 1W 220K OHM J
R429	24942102	CARBON COMPOSITION, 1/2W 1K OHM J
R431	24383102	OXIDE METAL FILM, 2W 1K OHM J
R432	24376274	CARBON FILM, 1/2W 270K OHM J
R433	24376274	CARBON FILM, 1/2W 270K OHM J
R434	24376274	CARBON FILM, 1/2W 270K OHM J
R435	24366332	CARBON FILM, 1/6W 3.3K OHM J
R436	24366473	CARBON FILM, 1/6W 47K OHM J
R437	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R438	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R439	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R440	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R441	24533331	FUSIBLE, 2W 330 OHM J
R443	24310109	OXIDE METAL FILM, 1/2W 1 OHM J
R444	24322398	OXIDE METAL FILM, 1W 0.39 OHM J
R446	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R447	24382473	OXIDE METAL FILM, 1W 47K OHM J
R448	24366562	CARBON FILM, 1/6W 5.6K OHM J
R449	24366152	CARBON FILM, 1/6W 1.5K OHM J
R466	24366433	CARBON FILM, 1/6W 43K OHM J
R467	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R469	24011101	CHIP, METAL FILM, 1/20W 100 OHM J

Location No.	Parts No.	Description
R470	24322478	OXIDE METAL FILM, 1W 0.47 OHM J
R471	24366224	CARBON FILM, 1/6W 220K OHM J
R472	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R473	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R474	24376393	CARBON FILM, 1/2W 39K OHM J
R475	24366101	CARBON FILM, 1/6W 100 OHM J
R476	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
⚠ R477	24998331	CHIP, METAL FILM, 1/16W 330 OHM D
R478	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R480	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R481	24366103	CARBON FILM, 1/6W 10K OHM J
R482	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R483	24000445	CHIP JUMPER, 1608TYPE
R485	24011681	CHIP, METAL FILM, 1/20W 680 OHM J
R486	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R487	24552271	OXIDE METAL FILM, 1/2W 270 OHM J
R488	24552151	OXIDE METAL FILM, 1/2W 150 OHM J
R489	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R490	24552331	OXIDE METAL FILM, 1/2W 330 OHM J
R491	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
⚠ R492	24998102	CHIP, 1/16W 1K OHM
⚠ R493	24998391	CHIP, 1/16W 390 OHM
⚠ R494	24998471	CHIP, 1/16W 470 OHM
R495	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R496	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R497	24011100	CHIP, METAL FILM, 1/20W 10 OHM J
R498	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R499	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R513	24366101	CARBON FILM, 1/6W 100 OHM J
R515	24366103	CARBON FILM, 1/6W 10K OHM J
R601	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R602	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R603	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R604	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R609	24011563	CHIP, METAL FILM, 1/20W 56K OHM J
R610	24011273	CHIP, 1/20W 27K OHM J
R611	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R612	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R613	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R614	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R615	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R616	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R626	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R627	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R661	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R662	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R663	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R665	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R666	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R667	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R668	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R671	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R672	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R673	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R674	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R676	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R677	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R681	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R682	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R683	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R684	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R687	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R688	24011224	CHIP, METAL FILM, 1/20W 220K OHM J
R693	24000445	CHIP JUMPER, 1608TYPE
R697	24553221	OXIDE METAL FILM, 1W 220 OHM J
R698	24011103	CHIP, METAL FILM, 1/20W 10K OHM J

Location No.	Parts No.	Description
R699	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R810	24007061	CERAMIC COVERED, 2W 1.8 OHM K
R818	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
R819	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R842	24376563	CARB0N FILM, 1/2W 56K OHM J
R843	24376563	CARB0N FILM, 1/2W 56K OHM J
R844	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R845	24366102	CARBON FILM, 1/6W 1K OHM J
R849	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R854	24381150	OXIDE METAL FILM, 1/2W 15 OHM J
R860	24383473	OXIDE METAL FILM, 2W 47K OHM J
R862	24321689	OXIDE METAL FILM, 1/2W 6.8 OHM J
R864	24552102	OXIDE METAL FILM, 1/2W 1K OHM J
R865	24552390	OXIDE METAL FILM, 1/2W 39 OHM J
R866	24366472	CARBON FILM, 1/6W 4.7K OHM J
R867	24366223	CARBON FILM, 1/6W 22K OHM J
R868	24552470	OXIDE METAL FILM, 1/2W 47 OHM J
R870	24381151	OXIDE METAL FILM, 1/2W 150 OHM J
R871	24382680	OXIDE METAL FILM, 1W 68 OHM J
R873	24552100	OXIDE METAL FILM, 1/2W 10 OHM J
R874	24366150	CARBON FILM, 1/6W 15 OHM J
R881	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R883	24381102	OXIDE METAL FILM, 1/2W 1K OHM J
R885	24366471	CARBON FILM, 1/6W 470 OHM J
R893	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R894	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
⚠ R899	24010001	CARBON FILM, 1/2W 3.9M OHM J
R900	24000892	FUSIBLE, 1W 1.2 OHM J
R901	24366331	CARBON FILM, 1/6W 330 OHM J
R903	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
R905	24872180	CHIP, 1/16W 18 OHM J
R906	24872271	CHIP, 1/16W 270 OHM J
R908	24872560	CHIP, 1/16W 56 OHM J
R909	24872270	CHIP, 1/16W 27 OHM J
R910	24322568	OXIDE METAL FILM, 1W 0.56 OHM J
R911	24366331	CARBON FILM, 1/6W 330 OHM J
R913	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
R915	24872270	CHIP, 1/16W 27 OHM J
R916	24872271	CHIP, 1/16W 270 OHM J
R918	24872560	CHIP, 1/16W 56 OHM J
R919	24872180	CHIP, 1/16W 18 OHM J
R920	24366222	CARBON FILM, 1/6W 2.2K OHM J
R921	24366331	CARBON FILM, 1/6W 330 OHM J
R923	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
R925	24872330	CHIP, 1/16W 33 OHM J
R926	24872271	CHIP, 1/16W 270 OHM J
R928	24872680	CHIP, 1/16W 68 OHM J
R929	24872180	CHIP, 1/16W 18 OHM J
R930	24366222	CARBON FILM, 1/6W 2.2K OHM J
R931	24568272	CERAMIC COVERED G 7W 2.7K J
R938	24366150	CARBON FILM, 1/6W 15 OHM J
R944	24568272	CERAMIC COVERED G 7W 2.7K J
R945	24366150	CARBON FILM, 1/6W 15 OHM J
R948	24366222	CARBON FILM, 1/6W 2.2K OHM J
R950	24366222	CARBON FILM, 1/6W 2.2K OHM J
R951	24568272	CERAMIC COVERED G 7W 2.7K J
R958	24366150	CARBON FILM, 1/6W 15 OHM J
R961	24872222	CHIP, 1/16W 2.2K OHM J
R962	24872182	CHIP, 1/16W 1.8K OHM J
R963	24872100	CHIP, 1/16W 10 OHM J
R964	24872332	CHIP, 1/16W 3.3K OHM J
R965	24872101	CHIP, 1/16W 100 OHM J
R966	24872122	CHIP, 1/16W 1.2K OHM J
R967	24872122	CHIP, 1/16W 1.2K OHM J
R968	24366222	CARBON FILM, 1/6W 2.2K OHM J
R969	24872122	CHIP, 1/16W 1.2K OHM J

Location No.	Parts No.	Description
R970	24872122	CHIP, 1/16W 1.2K OHM J
R971	24872152	CHIP, 1/16W 1.5K OHM J
R978	24366222	CARBON FILM, 1/6W 2.2K OHM J
R987	24872101	CHIP, 1/16W 100 OHM J
R988	24366222	CARBON FILM, 1/6W 2.2K OHM J
R991	24366222	CARBON FILM, 1/6W 2.2K OHM J
R992	24366222	CARBON FILM, 1/6W 2.2K OHM J
R4430	24381150	OXIDE METAL FILM, 1/2W 15 OHM J
R4431	24366102	CARBON FILM, 1/6W 1K OHM J
R7102	24872101	CHIP, 1/16W 100 OHM J
R7103	24872102	CHIP, 1/16W 1K OHM J
R7104	24872102	CHIP, 1/16W 1K OHM J
R7105	24871221	CHIP, 1/8W 220 OHM J
R7106	24871221	CHIP, 1/8W 220 OHM J
R7107	24872101	CHIP, 1/16W 100 OHM J
R7108	24872332	CHIP, 1/16W 3.3K OHM J
R7109	24872333	CHIP, 1/16W 33K OHM J
R7110	24872273	CHIP, 1/16W 27K OHM J
R7111	24872333	CHIP, 1/16W 33K OHM J
R7112	24872151	CHIP, 1/16W 150 OHM J
R7113	24872751	CHIP, 1/16W 750 OHM J
R7114	24872681	CHIP, 1/16W 680 OHM J
R7115	24871471	CHIP, 1/8W 470 OHM J
R7116	24871471	CHIP, 1/8W 470 OHM J
R7117	24872101	CHIP, 1/16W 100 OHM J
R7118	24872101	CHIP, 1/16W 100 OHM J
R7119	24871100	CHIP, 1/8W 10 OHM J
R7120	24871100	CHIP, 1/8W 10 OHM J
R7121	24871100	CHIP, 1/8W 10 OHM J
R7122	24871100	CHIP, 1/8W 10 OHM J
R7123	24871100	CHIP, 1/8W 10 OHM J
R7124	24871100	CHIP, 1/8W 10 OHM J
R7125	24871100	CHIP, 1/8W 10 OHM J
R7126	24871100	CHIP, 1/8W 10 OHM J
R7127	24552331	OXIDE METAL FILM, 1/2W 330 OHM J
R7128	24872751	CHIP, 1/16W 750 OHM J
R7129	24872122	CHIP, 1/16W 1.2K OHM J
R7130	24872683	CHIP, 1/16W 68K OHM J
R7131	24872683	CHIP, 1/16W 68K OHM J
R7132	24872751	CHIP, 1/16W 750 OHM J
R7133	24872122	CHIP, 1/16W 1.2K OHM J
R7134	24872102	CHIP, 1/16W 1K OHM J
R7135	24553100	OXIDE METAL FILM, 1W 10 OHM J
R7136	24321229	OXIDE METAL FILM, 1/2W 2.2 OHM J
R7137	24553100	OXIDE METAL FILM, 1W 10 OHM J
R7138	24322229	OXIDE METAL FILM, 1W 2.2 OHM J
R7139	24554221	OXIDE METAL FILM, 2W 220 OHM J
R7140	24872220	CHIP, 1/16W 22 OHM J
R7141	24872220	CHIP, 1/16W 22 OHM J
R7701	24011392	CHIP, 1/20W 3.9K OHM J
R7702	24000445	CHIP JUMPER, 1608TYPE
R7707	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7708	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7710	24383221	OXIDE METAL FILM, 2W 220 OHM J
R7711	24339189	METAL FILM 2W 1R8 J
R7712	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7713	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7715	24383221	OXIDE METAL FILM, 2W 220 OHM J
R7716	24339189	METAL FILM 2W 1R8 J
R7717	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7718	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7720	24383221	OXIDE METAL FILM, 2W 220 OHM J
R7721	24339189	METAL FILM 2W 1R8 J
R7722	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7723	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7725	24383221	OXIDE METAL FILM, 2W 220 OHM J

Location No.	Parts No.	Description
R7726	24339189	METAL FILM 2W 1R8 J
R7727	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7728	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7730	24383221	OXIDE METAL FILM, 2W 220 OHM J
R7731	24339189	METAL FILM 2W 1R8 J
R7732	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7733	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7735	24383221	OXIDE METAL FILM, 2W 220 OHM J
R7736	24339189	METAL FILM 2W 1R8 J
R7743	24322338	OXIDE METAL FILM, 1W 0.33 OHM J
R7744	24322338	OXIDE METAL FILM, 1W 0.33 OHM J
R7745	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R7746	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R7747	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R7748	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R7749	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R7750	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R7751	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R7752	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R7753	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R7754	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R7755	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R7756	24011153	CHIP, METAL FILM, 1/2OW 15K OHM J
R7757	24011681	CHIP, METAL FILM, 1/20W 680 OHM J
R7758	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R7760	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R7761	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
R7762	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R7763	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
R7765	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7766	24366103	CARBON FILM, 1/6W 10K OHM J
R7767	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7768	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7769	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7770	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7771	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7772	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R7773	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7774	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7801	24383471	OXIDE METAL FILM, 2W 470 OHM J
R7802	24383681	OXIDE METAL FILM, 2W 680 OHM J
R7880	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R7881	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7882	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7883	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7884	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R7885	24366472	CARBON FILM, 1/6W 4.7K OHM J
R7886	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R7887	24366103	CARBON FILM, 1/6W 10K OHM J
R7890	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
R7891	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
R7892	24366472	CARBON FILM, 1/6W 4.7K OHM J
R7893	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R7910	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R7911	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R7912	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R7913	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R7931	24000445	CHIP JUMPER, 1608TYPE
R9501	24872101	CHIP, 1/16W 100 OHM J
R9503	24872122	CHIP, 1/16W 1.2K OHM J
R9504	24872122	CHIP, 1/16W 1.2K OHM J
R9607	24872101	CHIP, 1/16W 100 OHM J
R9608	24872122	CHIP, 1/16W 1.2K OHM J
R9609	24872122	CHIP, 1/16W 1.2K OHM J
RA71	24366273	CARBON FILM, 1/6W 27K OHM J
RA72	24366153	CARBON FILM, 1/6W 15K OHM J

Location No.	Parts No.	Description
RA73	24366822	CARBON FILM, 1/6W 8.2K OHM J
RA76	24366822	CARBON FILM, 1/6W 8.2K OHM J
RA77	24366153	CARBON FILM, 1/6W 15K OHM J
RA78	24366273	CARBON FILM, 1/6W 27K OHM J
RA79	24366823	CARBON FILM, 1/6W 82K OHM J
RB08	24366331	CARBON FILM, 1/6W 330 OHM J
RB09	24366331	CARBON FILM, 1/6W 330 OHM J
RB10	24366103	CARBON FILM, 1/6W 10K OHM J
RB11	24366222	CARBON FILM, 1/6W 2.2K OHM J
RB12	24366103	CARBON FILM, 1/6W 10K OHM J
RB13	24366222	CARBON FILM, 1/6W 2.2K OHM J
RB15	24366471	CARBON FILM, 1/6W 470 OHM J
RB19	24366470	CARBON FILM, 1/6W 47 OHM J
RB51	24366224	CARBON FILM, 1/6W 220K OHM J
RB52	24366123	CARBON FILM, 1/6W 12K OHM J
RB53	24366123	CARBON FILM, 1/6W 12K OHM J
RB54	24366123	CARBON FILM, 1/6W 12K OHM J
RB55	24366224	CARBON FILM, 1/6W 220K OHM J
RB56	24366151	CARBON FILM, 1/6W 150 OHM J
RB57	24366103	CARBON FILM, 1/6W 10K OHM J
RB58	24366103	CARBON FILM, 1/6W 10K OHM J
RB59	24366122	CARBON FILM, 1/6W 1.2K OHM J
RB60	24366224	CARBON FILM, 1/6W 220K OHM J
RB61	24366100	CARBON FILM, 1/6W 10 OHM J
RB62	24366272	CARBON FILM, 1/6W 2.7K OHM J
RB63	24366271	CARBON FILM, 1/6W 270 OHM J
RB67	24366221	CARBON FILM, 1/6W 220 OHM J
RB69	24366272	CARBON FILM, 1/6W 2.7K OHM J
RB70	24366331	CARBON FILM, 1/6W 330 OHM J
RB504	24366104	CARBON FILM, 1/6W 100K OHM J
RB505	24366101	CARBON FILM, 1/6W 100 OHM J
RB506	24366390	CARBON FILM, 1/6W 39 OHM J
RB558	24366223	CARBON FILM, 1/6W 22K OHM J
RB559	24366223	CARBON FILM, 1/6W 22K OHM J
RB561	24366101	CARBON FILM, 1/6W 100 OHM J
RB562	24366104	CARBON FILM, 1/6W 100K OHM J
RB563	24366390	CARBON FILM, 1/6W 39 OHM J
RB567	24366223	CARBON FILM, 1/6W 22K OHM J
RC01	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RC02	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC03	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC04	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC05	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC06	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC07	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC08	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC09	24011270	CHIP, 1/20W 27 OHM J
RC10	24011270	CHIP, 1/20W 27 OHM J
RC13	24000824	CHIP JUMPER, 2125TYPE
RC14	24000824	CHIP JUMPER, 2125TYPE
RC15	24000824	CHIP JUMPER, 2125TYPE
RC17	24000824	CHIP JUMPER, 2125TYPE
RC18	24000824	CHIP JUMPER, 2125TYPE
RC19	24000824	CHIP JUMPER, 2125TYPE
RC20	24000824	CHIP JUMPER, 2125TYPE
RC27	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RC32	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RC33	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC34	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RC35	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC36	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RC37	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC38	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RC39	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC40	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RC41	24011105	CHIP, METAL FILM, 1/20W 1M OHM J

Location No.	Parts No.	Description
RC49	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC50	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RC51	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC52	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC53	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC54	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
RC58	24000445	CHIP JUMPER, 1608TYPE
RC60	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC61	24011564	CHIP, METAL FILM, 1/20W 560K OHM J
RC62	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RE10	24382223	OXIDE METAL FILM, 1W 22K OHM J
RE11	24322568	OXIDE METAL FILM, 1W 0.56 OHM J
RE12	24322568	OXIDE METAL FILM, 1W 0.56 OHM J
RE13	24381681	OXIDE METAL FILM, 1/2W 680 OHM J
RE14	24383330	OXIDE FILM 2W 33. J
RE15	24383330	OXIDE FILM 2W 33. J
RE16	24366682	CARBON FILM, 1/6W 6.8K OHM J
RE17	24366152	CARBON FILM, 1/6W 1.5K OHM J
RE18	24381101	OXIDE METAL FILM, 1/2W 100 OHM J
RE22	24366102	CARBON FILM, 1/6W 1K OHM J
RE40	24366471	CARBON FILM, 1/6W 470 OHM J
RE43	24366102	CARBON FILM, 1/6W 1K OHM J
RE44	24000529	METAL FILM, 1/4W 6.8K OHM F
RE45	24000356	METAL FILM, 1/4W 820 OHM F
RE46	24000529	METAL FILM, 1/4W 6.8K OHM F
RE48	24366222	CARBON FILM, 1/6W 2.2K OHM J
RE50	24000147	METAL FILM, 1/4W 470 OHM F
RE51	24000155	METAL FILM 1/4W 15 F
RE52	24000169	METAL FILM 1/4W 68 F
RE53	24000135	METAL FILM 1/4W 120 F
RE54	24000220	METAL FILM, 1/4W 390 OHM F
RE55	24366223	CARBON FILM, 1/6W 22K OHM J
RE60	24382332	OXIDE FILM 1W 3.3K J
RE80	24000245	METAL FILM, 1/4W 33K OHM F
RE81	24000250	METAL FILM, 1/4W 56K OHM F
RE82	24000364	METAL FILM, 1/4W 1.8K OHM F
RF01	24366103	CARBON FILM, 1/6W 10K OHM J
RF02	24366122	CARBON FILM, 1/6W 1.2K OHM J
RF03	24366103	CARBON FILM, 1/6W 10K OHM J
RF04	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV20	24366750	CARBON FILM, 1/6W 75 OHM J
RV21	24366750	CARBON FILM, 1/6W 75 OHM J
RV22	24366750	CARBON FILM, 1/6W 75 OHM J
RV23	24366101	CARBON FILM, 1/6W 100 OHM J
RV33	24366750	CARBON FILM, 1/6W 75 OHM J
RV34	24366750	CARBON FILM, 1/6W 75 OHM J
RV35	24366750	CARBON FILM, 1/6W 75 OHM J
RV36	24366750	CARBON FILM, 1/6W 75 OHM J
RV37	24366750	CARBON FILM, 1/6W 75 OHM J
RV40	24366750	CARBON FILM, 1/6W 75 OHM J
RV61	24366101	CARBON FILM, 1/6W 100 OHM J
RV85	24366471	CARBON FILM, 1/6W 470 OHM J
RV86	24366471	CARBON FILM, 1/6W 470 OHM J
RV89	24366680	CARBON FILM, 1/6W 68 OHM J

COIL & TRANSFORMERS

L101	23289845	COIL, PEAKING, TRF4680AT
L103	23289844	COIL, PEAKING, TRF4470AT
L302	23248073	COIL, CHOKE, TLN3299D
L303	23248073	COIL, CHOKE, TLN3299D
L304	23103145	FERRITE CHOKE, TEM2011AA
L305	23103248	FERRITR CHOKE, TEM2014AA
L310	23289846	COIL, PEAKING, TRF4101AT
L401	23289560	COIL, PEAKING, TRF4560AF
⚠ L402	23248345	COIL, CHOKE EI24 120MMH TLN3534AH
L403	23103145	FERRITE CHOKE, TEM2011AA

Location No.	Parts No.	Description
L406	23248191	COIL, CHOKE, TLN3351AD
L407	23103248	FERRITR CHOKE, TEM2014AA
L408	23103248	FERRITR CHOKE, TEM2014AA
⚠ L441	23233116	COIL, LIN X22H37 5.6MMH TLN2222AH
⚠ L462	23231390	DEFLECTION YOKE, TDY707RD TDY707RD
⚠ L463	23231390	DEFLECTION YOKE, TDY707RD TDY707RD
⚠ L464	23231390	DEFLECTION YOKE, TDY707RD TDY707RD
L472	23102542	COIL, CPM29.1VM6TMAG MAG-1135
L473	23102542	COIL, CPM29.1VM6TMAG MAG-1135
L474	23102542	COIL, CPM29.1VM6TMAG MAG-1135
L490	23280019	COIL, PEAKING, TRF4330AZ
L850	23103145	FERRITE CHOKE, TEM2011AA
L851	23103145	FERRITE CHOKE, TEM2011AA
L852	23103145	FERRITE CHOKE, TEM2011AA
L854	23103145	FERRITE CHOKE, TEM2011AA
L861	23103145	FERRITE CHOKE, TEM2011AA
L862	23103145	FERRITE CHOKE, TEM2011AA
L864	23103145	FERRITE CHOKE, TEM2011AA
L880	23103145	FERRITE CHOKE, TEM2011AA
L881	23103145	FERRITE CHOKE, TEM2011AA
L885	23248073	COIL, CHOKE, TLN3299D
L886	23103145	FERRITE CHOKE, TEM2011AA
L887	23103145	FERRITE CHOKE, TEM2011AA
L888	23248321	COIL, CHOKE 15X23H 22MMH 4.2A TLN3462AH
L891	23103145	FERRITE CHOKE, TEM2011AA
L894	23248247	COIL, CHOKE, TLN3499AH
L902	23289159	COIL, PEAKING, TRF41R5AF
L904	23289120	COIL, PEAKING, TRF4120AF
L905	23289689	COIL, PEAKING, TRF46R8AF
L911	23289220	COIL, PEAKING, TRF4220AF
L913	23289159	COIL, PEAKING, TRF41R5AF
L915	23289689	COIL, PEAKING, TRF46R8AF
L916	23289120	COIL, PEAKING, TRF4120AF
L923	23289159	COIL, PEAKING, TRF41R5AF
L924	23289120	COIL, PEAKING, TRF4120AF
L925	23289689	COIL, PEAKING, TRF46R8AF
L7101	23289840	COIL, PEAKING, TRF4100AT
L7102	23103894	FILTER, FERRITE BEAD, TEM2011AW
L7103	23103894	FILTER, FERRITE BEAD, TEM2011AW
L7104	23261974	COIL, FERRITE BEAD, HC5-035
L7710	23248073	COIL, CHOKE, TLN3299D
L7711	23248073	COIL, CHOKE, TLN3299D
LB51	23237987	COIL, PEAKING, TRF4100AC
LC02	23103887	INDUCTOR, CHIP BEAD, TEM2130AM
LC03	23103271	FILTER, EMI 2012 201OHM 0.35A TEM2033AD
LC04	23103271	FILTER, EMI 2012 201OHM 0.35A TEM2033AD
LC05	23103887	INDUCTOR, CHIP BEAD, TEM2130AM
LC06	23103887	INDUCTOR, CHIP BEAD, TEM2130AM
LE11	23103145	FERRITE CHOKE, TEM2011AA
LE12	23103145	FERRITE CHOKE, TEM2011AA
LE13	23103145	FERRITE CHOKE, TEM2011AA
LE50	23289843	COIL, PEAKING, TRF4330AT
LE51	23280019	COIL, PEAKING, TRF4330AZ
LE53	23248358	COIL, CHOKE EI22 100MMHK TLN3540AH
LE54	23248213	COIL, CHOKE, TLN3481AH
LE55	23248247	COIL, CHOKE, TLN3499AH
LE56	23280016	COIL, PEAKING, TRF4100AZ
LE57	23248320	COIL, CHOKE 15X23H 100MMH 2.5A TLN3441AH
LE58	23248247	COIL, CHOKE, TLN3499AH
LE59	23280019	COIL, PEAKING, TRF4330AZ
LE60	23248247	COIL, CHOKE, TLN3499AH
LE71	23103145	FERRITE CHOKE, TEM2011AA
LE72	23103145	FERRITE CHOKE, TEM2011AA
LE73	23103145	FERRITE CHOKE, TEM2011AA
LE74	23103145	FERRITE CHOKE, TEM2011AA
LE75	23103145	FERRITE CHOKE, TEM2011AA

Location No.	Parts No.	Description
LE76	23103145	FERRITE CHOKE, TEM2011AA
LF01	23280022	COIL, PEAKING, TRF4101AZ
LF02	23280022	COIL, PEAKING, TRF4101AZ
LV13	23289100	COIL, PEAKING, TRF4100AF
LV20	23238705	COIL, PEAKING, TRF4560AJ
LV36	23289560	COIL, PEAKING, TRF4560AF
LV37	23289560	COIL, PEAKING, TRF4560AF
T400	23224386	TRANSFORMER, FOCUS, TLN2220AH
T401	23224371	TRANSFORMER, HORIZ DRIVE, TLN1080AH
⚠ T461	23236816	TRANSFORMER, FLY-BACK TFB3094AD (NO SERVICE PART)
T461A	23192972	ANODE CAP ASSY, TCC5609AT
T461Z	23236820	TRANSFORMER FLYBACK SERVICE TFB3094ZD
⚠ T801	23211778	COIL, LINE FILTER 37X44H 3.5MH TRF3209AH
⚠ T862	23217669	TRANSFORMER, CONVERTER TPW3549AS
⚠ TE01	23211725	COIL, LINE FILTER, TRF3228AQ
⚠ TE60	23217662	TRANSFORMER, CONVERTER TPW3547AS
SEMICONDUCTORS		
Q241	23114756	TRANSISTOR, 2SC2482
Q301	23319787	IC, LA7833S
Q302	23000711	IC, TA1317AN
Q305	23205005	TRANSISTOR, KTA2014Y
Q306	70119059	IC, OP AMP, TA75902P(J)
Q370	23205006	TRANSISTOR, KTC4075Y
Q371	23205005	TRANSISTOR, KTA2014Y
Q372	23205006	TRANSISTOR, KTC4075Y
Q400	23205079	TRANSISTOR, 2SC4686A
Q402	23205166	TRANSISTOR, FET, 2SK2962
Q404	23205149	TRANSISTOR, 2SC5859(FA)
Q405	23205005	TRANSISTOR, KTA2014Y
Q406	23205006	TRANSISTOR, KTC4075Y
⚠ Q408	23205005	TRANSISTOR, KTA2014Y
Q409	23205006	TRANSISTOR, KTC4075Y
Q410	23205006	TRANSISTOR, KTC4075Y
Q411	23205006	TRANSISTOR, KTC4075Y
Q420	23114756	TRANSISTOR, 2SC2482
Q425	23205031	TRANSISTOR, FET, 2SK2920
Q428	23205006	TRANSISTOR, KTC4075Y
Q470	23114541	TRANSISTOR, 2SA1320
Q471	23314993	TRANSISTOR, 2SC4081 Q
Q472	23314993	TRANSISTOR, 2SC4081 Q
Q473	23314994	TRANSISTOR, 2SA1576A106
Q601	23009603	IC, BTL AUDIO AMP AN7580
Q612	23205005	TRANSISTOR, KTA2014Y
Q613	23205006	TRANSISTOR, KTC4075Y
Q614	23205236	TRANSISTOR, NPN R1=4.7K R2=47K KRC106S (SOT-23)
Q661	23205204	TRANSISTOR, NPN VEBO=25V KTC2875B-RTK
Q662	23205204	TRANSISTOR, NPN VEBO=25V KTC2875B-RTK
Q663	23906596	IC, BA4558
Q664	23205246	TRANSISTOR, PNP R1=R2=47K KRA104S (SOT-23)
Q681	23205204	TRANSISTOR, NPN VEBO=25V KTC2875B-RTK
Q682	23205204	TRANSISTOR, NPN VEBO=25V KTC2875B-RTK
Q711	23205269	TRANSISTOR, VCBO-160V IC-1.5A 2SA2005
Q712	23205270	TRANSISTOR, VCBO 160V 1.5A 2SC5511
Q751	23135048	IC, CONVERGENCE OUT STK394-250A
Q752	23135048	IC, CONVERGENCE OUT STK394-250A
Q765	23205006	TRANSISTOR, KTC4075Y
Q766	23205006	TRANSISTOR, KTC4075Y
Q767	23205006	TRANSISTOR, KTC4075Y
Q768	23205006	TRANSISTOR, KTC4075Y
Q769	23906164	IC, TA75S393F
Q782	23319894	IC, NJM79M05FA
Q784	23009188	IC, KIA7805API
Q785	70129444	IC, PST994D
Q794	23906164	IC, TA75S393F
Q795	23000044	IC, TC4066BP(N)

Location No.	Parts No.	Description
Q796	23205006	TRANSISTOR, KTC4075Y
Q801	23135028	IC, STR-Z4479
⚠ Q841	23009270	IC, PHOTO COUPLER, PS2581L1(D)
Q843	23205006	TRANSISTOR, KTC4075Y
Q844	23205006	TRANSISTOR, KTC4075Y
⚠ Q862	23009270	IC, PHOTO COUPLER, PS2581L1(D)
⚠ Q881	23319693	IC, SE116N, LF4
Q894	23205006	TRANSISTOR, KTC4075Y
Q901	23205159	TRANSISTOR, 2SC3942
Q902	23205165	TRANSISTOR, 2SC3950E
Q911	23205159	TRANSISTOR, 2SC3942
Q912	23205165	TRANSISTOR, 2SC3950E
Q913	23205054	TRANSISTOR, KTA1504Y
Q921	23205159	TRANSISTOR, 2SC3942
Q922	23205165	TRANSISTOR, 2SC3950E
Q961	23205057	TRANSISTOR, KTC3875Y
Q962	23205054	TRANSISTOR, KTA1504Y
Q973	23205054	TRANSISTOR, KTA1504Y
Q4430	23314164	TRANSISTOR, 2SC2236-Y(C))
Q7101	23205057	TRANSISTOR, KTC3875Y
Q7102	23205057	TRANSISTOR, KTC3875Y
Q7103	70114402	TRANSISTOR, 2SC3437-Y
Q7104	23114432	TRANSISTOR, 2SC1815-GR
Q7105	23205057	TRANSISTOR, KTC3875Y
Q7106	23205057	TRANSISTOR, KTC3875Y
Q7107	23205054	TRANSISTOR, KTA1504Y
Q7108	23205057	TRANSISTOR, KTC3875Y
Q7109	23205054	TRANSISTOR, KTA1504Y
Q7761	23205005	TRANSISTOR, KTA2014Y
Q7762	23205006	TRANSISTOR, KTC4075Y
Q7763	23205006	TRANSISTOR, KTC4075Y
Q7764	23205005	TRANSISTOR, KTA2014Y
QB01	23314962	TRANSISTOR, KTA1266 Y
QB02	23314962	TRANSISTOR, KTA1266 Y
QB51	23319808	IC, M5218AP
QB52	23314965	TRANSISTOR, KTC3198 Y
QB53	23314962	TRANSISTOR, KTA1266 Y
QB502	23114422	TRANSISTOR, 2SA562TM-Y
QB508	23114422	TRANSISTOR, 2SA562TM-Y
QB509	23114623	TRANSISTOR, 2SC2878-A
QB510	23114460	TRANSISTOR, RN1204
QB511	23114460	TRANSISTOR, RN1204
QB512	23114623	TRANSISTOR, 2SC2878-A
QB513	23114460	TRANSISTOR, RN1204
QC01	23085057	IC, USB CONTROLLER
QC02	23085062	IC, UPA1813
QC03	23085062	IC, UPA1813
QC04	23085062	IC, UPA1813
QC05	23085062	IC, UPA1813
QC08	23085061	IC, REG PQ033EZ01ZP
QE01	23135010	IC, STR-G6653
⚠ QE05	23009270	IC, PHOTO COUPLER, PS2581L1(D)
QE40	23000701	IC, NJM431L
QE50	23000806	IC, SI-8033SS
QE52	23009998	IC, ADJ REG. VO=1.5V-12.0V BA00JC5WT-V5
QE53	23000469	IC, PQ5EV3
QE54	23314141	TRANSISTOR, 2SC3852
QF01	23114735	TRANSISTOR, 2SA102-Y(C)
QF02	23314965	TRANSISTOR, KTC3198 Y
QH301	23900003	SENSOR, PHOTOSENOR SS-2109Y @E051Z
	23900003	SENSOR, PHOTOSENOR SS-2109Y @E052Z
	23900003	SENSOR, PHOTOSENOR SS-2109Y @E053Z
	23900003	SENSOR, PHOTOSENOR SS-2109Y @E054Z
QV48	23114528	TRANSISTOR, 2SC1740S
D450	23357365	DIODE, 1N4004A-B5
D461	23224366	DIODE, FMQ-3GU

Location No.	Parts No.	Description
D101	23316755	DIODE, ZENER, MTZJ33C
D301	23316581	DIODE, ZENER 7.51-7.89 MA8075-H, TX
D302	23357366	DIODE, FR105-B5
D303	23316726	DIODE, ZENER, MTZJ15C
D304	23316794	DIODE, SC570A
D305	23357365	DIODE, 1N4004A-B5
D306	23357365	DIODE, 1N4004A-B5
D327	23316715	DIODE, ZENER, MTZJ11A
D333	23316715	DIODE, ZENER, MTZJ11A
D334	23316715	DIODE, ZENER, MTZJ11A
D336	23316571	DIODE, ZENER, MA8056-M
D337	23316571	DIODE, ZENER, MA8056-M
D365	23316581	DIODE, ZENER 7.51-7.89 MA8075-H, TX
D370	23316231	DIODE, 1SS355
D401	23118056	DIODE, AG01
D402	23357366	DIODE, FR105-B5
D404	23316254	DIODE, ERC06-15
D406	23357366	DIODE, FR105-B5
D411	23316610	DIODE, ZENER CHIP 17.55-18.45V MA8180-M
D412	23118707	DIODE, RP-1H
D413	23118707	DIODE, RP-1H
D414	23357366	DIODE, FR105-B5
D415	23357366	DIODE, FR105-B5
D418	23316755	DIODE, ZENER, MTZJ33C
D419	23316231	DIODE, 1SS355
D420	23118859	DIODE, 1SS133
D421	23357366	DIODE, FR105-B5
D425	23357366	DIODE, FR105-B5
D426	23316610	DIODE, ZENER CHIP 17.55-18.45V MA8180-M
D470	23316596	DIODE, ZENER CHIP 11.40-11.96V MA8120-L, TX
⚠ D490	23316574	DIODE, ZENER CHIP VZ6.05-6.36V MA8062-M
D491	23316231	DIODE, 1SS355
D492	23316591	DIODE, ZENER, MA8100-M
D505	23316747	DIODE, ZENER, MTZJ27C
D601	23316231	DIODE, 1SS355
D602	23316231	DIODE, 1SS355
D603	23316231	DIODE, 1SS355
D604	23316231	DIODE, 1SS355
D605	23316231	DIODE, 1SS355
D606	23316231	DIODE, 1SS355
D607	23316231	DIODE, 1SS355
D608	23316231	DIODE, 1SS355
D609	23316231	DIODE, 1SS355
D611	23316231	DIODE, 1SS355
D612	23316231	DIODE, 1SS355
D613	23316231	DIODE, 1SS355
D614	23316231	DIODE, 1SS355
D615	23316231	DIODE, 1SS355
D616	23316231	DIODE, 1SS355
D617	23316231	DIODE, 1SS355
D628	23316597	DIODE, ZENER, MA8120-M
D751	23357012	DIODE, 1SS244
D752	23357012	DIODE, 1SS244
D801	23316393	DIODE, VRM=600V IO=6A SIP D5SB60, 4009 F05
D844	23316571	DIODE, ZENER, MA8056-M
D845	23316231	DIODE, 1SS355
D848	23316231	DIODE, 1SS355
D851	23357216	DIODE, D4SBL20U
D852	23316714	DIODE, RL2Z
D853	23316714	DIODE, RL2Z
D854	23357366	DIODE, FR105-B5
D862	23357366	DIODE, FR105-B5
D864	23357366	DIODE, FR105-B5
D873	23316747	DIODE, ZENER, MTZJ27C
D875	23316688	DIODE, ZENER, MTZJ9.1C
D876	23316759	DIODE, ZENER, MTZJ36C

Location No.	Parts No.	Description
D878	23316686	DIODE, ZENER, MTZJ9.1A
D879	23316747	DIODE, ZENER, MTZJ27C
⚠ D880	23316663	DIODE, ZENER, MTZJ4.3B
D881	23316231	DIODE, 1SS355
D883	23357018	DIODE, RL2
D884	23357018	DIODE, RL2
D885	23357214	DIODE, D4SBS4
D891	23357434	DIODE, VRRM=40V IO=5A TO-220F15 YG801C04RF119
D894	23316231	DIODE, 1SS355
D895	23316574	DIODE, ZENER CHIP VZ6.05-6.36V MA8062-M
⚠ D899	24019485	VARISTOR, TNR10V431K
D901	23118859	DIODE, 1SS133
D906	23357012	DIODE, 1SS244
D907	23357012	DIODE, 1SS244
D908	23357012	DIODE, 1SS244
D909	23357012	DIODE, 1SS244
D912	23118859	DIODE, 1SS133
D913	23115337	DIODE, 1S1834
D916	23357012	DIODE, 1SS244
D917	23357012	DIODE, 1SS244
D918	23357012	DIODE, 1SS244
D919	23357012	DIODE, 1SS244
D921	23118859	DIODE, 1SS133
D926	23357012	DIODE, 1SS244
D927	23357012	DIODE, 1SS244
D928	23357012	DIODE, 1SS244
D929	23357012	DIODE, 1SS244
D936	23115337	DIODE, 1S1834
D940	23118859	DIODE, 1SS133
D941	23118859	DIODE, 1SS133
D942	23118859	DIODE, 1SS133
D943	23118859	DIODE, 1SS133
D944	23118859	DIODE, 1SS133
D945	23118859	DIODE, 1SS133
D962	23316574	DIODE, ZENER CHIP VZ6.05-6.36V MA8062-M
D967	23115337	DIODE, 1S1834
D4430	23357365	DIODE, 1N4004A-B5
D4431	23316593	DIODE, ZENER CHIP 10.40-10.94V MA8110-L
D7101	23118859	DIODE, 1SS133
D7102	23118859	DIODE, 1SS133
D7730	23118538	DIODE, ZENER, RD6.2ESA B2
D7731	23118538	DIODE, ZENER, RD6.2ESA B2
D7760	23316231	DIODE, 1SS355
D7761	23118520	DIODE, ZENER, RD8.2ES B2
D7762	23118520	DIODE, ZENER, RD8.2ES B2
D7763	23316231	DIODE, 1SS355
D7764	23316231	DIODE, 1SS355
D7766	23316231	DIODE, 1SS355
D7790	23316231	DIODE, 1SS355
D7791	23316231	DIODE, 1SS355
D7792	23316231	DIODE, 1SS355
D7793	23316585	DIODE, ZENER, MA8082-M
D7806	23316231	DIODE, 1SS355
DB01	23358493	DIODE, LED, SPR54MVWFLMN, RED-GRN
DB03	23358522	DIODE, LED, SIR-56SB3F
DB51	23358573	PHOTO DIODE, PIN 940NM HPI-2FER4
DB52	23118859	DIODE, 1SS133
DB54	23118859	DIODE, 1SS133
DB55	23118859	DIODE, 1SS133
DB56	23118859	DIODE, 1SS133
DB501	23118859	DIODE, 1SS133
DB504	23118859	DIODE, 1SS133
DE01	23316391	DIODE, D3SB60(4103)
DE10	23316672	DIODE, ZENER, MTZJ5.6B
DE12	23118859	DIODE, 1SS133
DE13	23118859	DIODE, 1SS133

Location No.	Parts No.	Description
DE14	23118859	DIODE, 1SS133
DE15	23357366	DIODE, FR105-B5
DE18	23316269	DIODE, AK04
DE19	23316746	DIODE, ZENER, MTZJ27B
DE52	23118213	DIODE, RK44,
DE54	23316734	DIODE, ZENER, MTZJ20B
DE55	23316746	DIODE, ZENER, MTZJ27B
DE60	23357366	DIODE, FR105-B5
DE61	23118052	DIODE, RU4Z LF-L1
DE71	23357434	DIODE, VRRM=40V IO=5A TO-220F15 YG801C04RF119
DE72	23316714	DIODE, RL2Z
DE73	23357434	DIODE, VRRM=40V IO=5A TO-220F15 YG801C04RF119
DE74	23357434	DIODE, VRRM=40V IO=5A TO-220F15 YG801C04RF119
DE75	23316184	DIODE, FML-G12S
DE76	23357434	DIODE, VRRM=40V IO=5A TO-220F15 YG801C04RF119
DE79	23316666	DIODE, ZENER, MTZJ4.7B
DH301	23316672	DIODE, ZENER, MTZJ5.6B @E051Z
	23316672	DIODE, ZENER, MTZJ5.6B @E052Z
	23316672	DIODE, ZENER, MTZJ5.6B @E053Z
	23316672	DIODE, ZENER, MTZJ5.6B @E054Z
KB01	23000852	IC, REMOTE PHOTO RECEIVER, PIC-37043TE2
MISCELLANEOUS		
BB10	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB11	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB20	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB21	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB60	23713014	CONNECTOR, BRIDGE PLUG 16P 1.5
BB70	23713309	PLUG , TAC-A46P-B1
BB100	23368627	CONNECTOR, BRIDGE B-B 8P 2.5JST 08TM-2.5FJ-E
BB200	23368627	CONNECTOR, BRIDGE B-B 8P 2.5JST 08TM-2.5FJ-E
D461B	72471082	SCREW, 3X10MM
E918 #1	23737007	BOLT, BOLT ASSY 50A60
E929	23969684	TAPE, GLASS-CLOTH, W/ADHESIVE W=90 T=0.18
E948 #1	23737007	BOLT, BOLT ASSY 50A60
E959	23969684	TAPE, GLASS-CLOTH, W/ADHESIVE W=90 T=0.18
E978 #1	23737007	BOLT, BOLT ASSY 50A60
E989	23969684	TAPE, GLASS-CLOTH, W/ADHESIVE W=90 T=0.18
⚠ F470	23144624	FUSE, AXIAL 125V 2.0A
⚠ F801	23144684	FUSE, CARTRIDGE 5X20 125V 8.0A
F801A	23165433	FUSE HOLDER, 5.2 SOC
F801B	23165433	FUSE HOLDER, 5.2 SOC
⚠ F850	23144712	FUSE, AXIAL 125V 3.0A
⚠ F851	23144714	FUSE, AXIAL 125V 4.0A
⚠ F852	23144714	FUSE, AXIAL 125V 4.0A
⚠ F860	23144626	FUSE, AXIAL 125V 4.0A
⚠ F885	23144715	FUSE, AXIAL 125V 5.0A
⚠ F891	23144714	FUSE, AXIAL 125V 4.0A
⚠ FE01	23144710	FUSE, AXIAL 125V 2.0A
⚠ FE72	23144708	FUSE, AXIAL 125V 1.0A
⚠ FE73	23144715	FUSE, AXIAL 125V 5.0A
⚠ FE74	23144715	FUSE, AXIAL 125V 5.0A
⚠ FE75	23144714	FUSE, AXIAL 125V 4.0A
⚠ FE76	23144715	FUSE, AXIAL 125V 5.0A
⚠ FE77	23144715	FUSE, AXIAL 125V 5.0A
⚠ FE79	23144709	FUSE, AXIAL 125V 1.5A
G101	24011151	CHIP, METAL FILM, 1/20W 150 OHM J
G102	24011151	CHIP, METAL FILM, 1/20W 150 OHM J
GJ101	24000445	CHIP JUMPER, 1608TYPE
GJ102	24000445	CHIP JUMPER, 1608TYPE
GJ105	24000445	CHIP JUMPER, 1608TYPE
GJ107	24000445	CHIP JUMPER, 1608TYPE
GJ108	24000445	CHIP JUMPER, 1608TYPE
GJ150	24000445	CHIP JUMPER, 1608TYPE
GJ151	24000445	CHIP JUMPER, 1608TYPE
GJ170	24000445	CHIP JUMPER, 1608TYPE

Location No.	Parts No.	Description
GJ911	24000445	CHIP JUMPER, 1608TYPE
GR103	24000445	CHIP JUMPER, 1608TYPE
GR31	24000445	CHIP JUMPER, 1608TYPE
GR32	24000445	CHIP JUMPER, 1608TYPE
GR602	24000445	CHIP JUMPER, 1608TYPE
H002	23148084	IF MODULE, US WOW MSP4440G MVUS53
H003	23344497	SWITCH, 2I3O US POD JALCO RSU142
H003A	23740989	NUT, F-CONNECTOR 2H BS
K501 #1	23311088	SCREEN, 51KP LENTICULAR SHEET
#2	23311013	SCREEN, 57KNH LENTICULAR SHEET
K502 #1	23311016	SCREEN, 51KN FRESNEL SHEET
#2	23311014	SCREEN, 57KN FRESNEL SHEET
K503 #1	23311019	SCREEN, PROTECTOR 51RN
#2	23311862	SCREEN, PROTECTOR 57RL
K601 #1	23405249	MIRROR, 51WL
#2	23405028	MIRROR, 57WL 1070/770*600*3
K913	23306531	REMOCON IR, BLASTER GLINK VTR CONT
MF01	23389209	CABLE, FFC P1.25-16-200
MF03	23389208	CABLE, FFC P1.25-29-70
P105	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
P404	23367069	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B9B-EH-F1A
P701	23368577	CONNECTOR, PLUG, 3P 2.5MM G JST-EH, B3B-EH-F1-TV4
P710	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
P711	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
P712	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
⚠ P800	23368013	CONNECTOR, PLUG, 2P 11.88MM W VT-JST
⚠ P801	23372209	POWER CORD, U/C FL 125V7A CMC042P JST
P802	23164965	CONNECTOR, PLUG 4P, W-P3504-#02
P880A	23367068	CONNECTOR, PLUG 8P, 2.5MM G JST-EH B8B-EH-F1-TV4
P880B	23367068	CONNECTOR, PLUG 8P, 2.5MM G JST-EH B8B-EH-F1-TV4
P900	23164563	CONNECTOR, PLUG 3P @E051Z
	23164563	CONNECTOR, PLUG 3P @E052Z
	23164563	CONNECTOR, PLUG 3P @E053Z
	23164563	CONNECTOR, PLUG 3P @E054Z
P913	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
P915A	23367069	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B9B-EH-F1A
P915B	23367069	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B9B-EH-F1A
P917	23367069	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B9B-EH-F1A
P918	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
P919	23368577	CONNECTOR, PLUG, 3P 2.5MM G JST-EH, B3B-EH-F1-TV4
P920	23164965	CONNECTOR, PLUG 4P, W-P3504-#02
PB22	23368578	CONNECTOR, PLUG 4P, 2.5MM G JST-EH, B4B-EH-F1-TV4
PB501	23365772	JACK, EARPHONE, HSJ1406-01-020
PB502	23365772	JACK, EARPHONE, HSJ1406-01-020
PB503	23368584	CONNECTOR, PLUG, 3P2.5MM W EH-JST S3B-EH
PB51	23368577	CONNECTOR, PLUG, 3P 2.5MM G JST-EH, B3B-EH-F1-TV4
PC01	23368579	CONNECTOR, PLUG 5P, 2.5MM G JST-EH, B5B-EH-F1-TV4
PE05	23367069	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B9B-EH-F1A
PE06	23367071	CONNECTOR, PLUG, NP 2.5MM G JST-EH, B11B-EH-F1A
PE55A	23368577	CONNECTOR, PLUG, 3P 2.5MM G JST-EH, B3B-EH-F1-TV4
PF01	23368581	CONNECTOR, PLUG 7P, 2.5MM G JST-EH B7B-EH-F1-TV4
PF02	23368577	CONNECTOR, PLUG, 3P 2.5MM G JST-EH, B3B-EH-F1-TV4
PV01	23023132	JACK, PIN 2S6P SMK LAP5030-0111GC
PV02	23023205	JACK, PIN 10P SMK KARI2
PV03	23023211	JACK, PIN 7P SMK KARI04
PV05	23365819	JACK, 1S3P
PV60	23367070	PLUG , NP 2.5MM G JST-EH B10B-EH-F1A
Q404B	72471082	SCREW, 3X10MM
S701	23145227	SWITCH, PUSH, 1C1P
SA01	23145226	SWITCH, 1C1P, PUSH
SA02	23145226	SWITCH, 1C1P, PUSH
SA03	23145226	SWITCH, 1C1P, PUSH
SA04	23145226	SWITCH, 1C1P, PUSH
SA05	23145226	SWITCH, 1C1P, PUSH
SA06	23145226	SWITCH, 1C1P, PUSH
SA07	23145226	SWITCH, 1C1P, PUSH

Location No.	Parts No.	Description
SA08	23145226	SWITCH, 1C1P, PUSH
SA09	23145226	SWITCH, 1C1P, PUSH
⚠ SR81	23146577	RELAY, DLS5D1-O(M)0.25W DLS5D1-O(M)0.
⚠ SR82	23146564	RELAY, DC12V, TV5, DG-3
⚠ UF02	23125924	DC FAN, D06A-12TM 05B(K) D06A-12TM05B(K)
⚠ V901A	23903180	SOCKET, ISHM62S-WE ICE ISHM62S-WE
⚠ V902A	23903180	SOCKET, ISHM62S-WE ICE ISHM62S-WE
⚠ V903A	23903180	SOCKET, ISHM62S-WE ICE ISHM62S-WE
W661	23351242	SPEAKER, 160X160 8-OHM 20W SPK-1424AW
W662	23351242	SPEAKER, 160X160 8-OHM 20W SPK-1424AW
XC01	23153589	CRYSTAL RESONATOR, XTAL 12MHZ
Z401	23140203	SPARK GAP, 2.0-3.0KV C-010, AG20PC152F-L3N
⚠ Z410	23110841	FOCUS PACK, TPA6030
⚠ Z450	24083014	COMPOSITE PARTS, CR-BLOCK TPA5011AH
Z450A	23501755	ANODE CABLE, 400LD FBT-C
ZC01	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC02	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC03	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC04	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC05	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC06	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC07	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC08	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC09	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC10	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC11	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC12	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC13	24019479	CHIP BLOCK, 1/32W 22 OHM J X-8
ZC19	24019404	CHIP BLOCK, 1/16W P-8 10K OHM J
ZC20	24019404	CHIP BLOCK, 1/16W P-8 10K OHM J
ZC21	24019404	CHIP BLOCK, 1/16W P-8 10K OHM J
ZH04	23103778	FERRITE CORE, TFE1008
ZH05	23103840	FERRITE CORE, TFE1013

PC BOARD ASSEMBLIES

✻ E021Z		23762345	PC BOARD ASSY, BACK/AV 51H94 PU PD1735B1
✻ E022Z		23762346	PC BOARD ASSY, FRONT-CON 51H94 PU PD1735B2
✻ E023Z		23762347	PC BOARD ASSY, FRONT-IN 51H94 PU PD1735B3
✻ E024Z		23762348	PC BOARD ASSY, REMOTE 51H94 PU PD1735B4
✻ E031Z		23762349	PC BOARD ASSY, CRT/SVM/R 51H94 PU PD1733D1
✻ E032Z		23762350	PC BOARD ASSY, CRT/SVM/G 51H94 PU PD1733D2
✻ E033Z		23762351	PC BOARD ASSY, CRT/SVM/B 51H94 PU PD1733D3
✻ E034Z		23762352	PC BOARD ASSY, SVM/DIV 51H94 PU PD1733D4
✻ E045Z		23788823	PC BOARD ASSY, IR BLASTER PU PD1289
✻ E051Z		23762004	PC BOARD ASSY, CONV-SEN PU PD0079B
✻ E052Z		23762005	PC BOARD ASSY, CONV-SEN2 PU PD0079B2
✻ E053Z		23762006	PC BOARD ASSY, CONV-SEN3 PU PD0079B3
✻ E054Z		23762007	PC BOARD ASSY, CONV-SEN4 PU PD0079B4
✻ U001		23148111	SCAN CONVERTER MODUL, MHSU21
✻ U401	#1	23762342	PC BOARD ASSY, DEFPOWER 51H94 PU PD1730H
✻	#2	23762476	PC BOARD ASSY, DEFPOWER 57H94 PU PD1730J
✻ U601		23762344	PC BOARD ASSY, IF/AUDIO 51H94 PU PD1731B2
✻ U711		23762343	PC BOARD ASSY, CONVER 51H94 PU PD1731B1
✻ UB11		23762851	PC BOARD ASSY, FRONT CONT51H94 PU PD1971A
✻ UC01		23762334	PC BOARD ASSY, MULTICARD 51H94 PU PD1821A
✻ UE01		23762333	PC BOARD ASSY, SUB POWER 51H94 PU PD1820A
✻ UF01		23762779	PC BOARD ASSY, FAN UNIT 51H94 PU PD1953A
✻ UZ01		23148112	MODULE, DIGITAL SHU153 SHU153

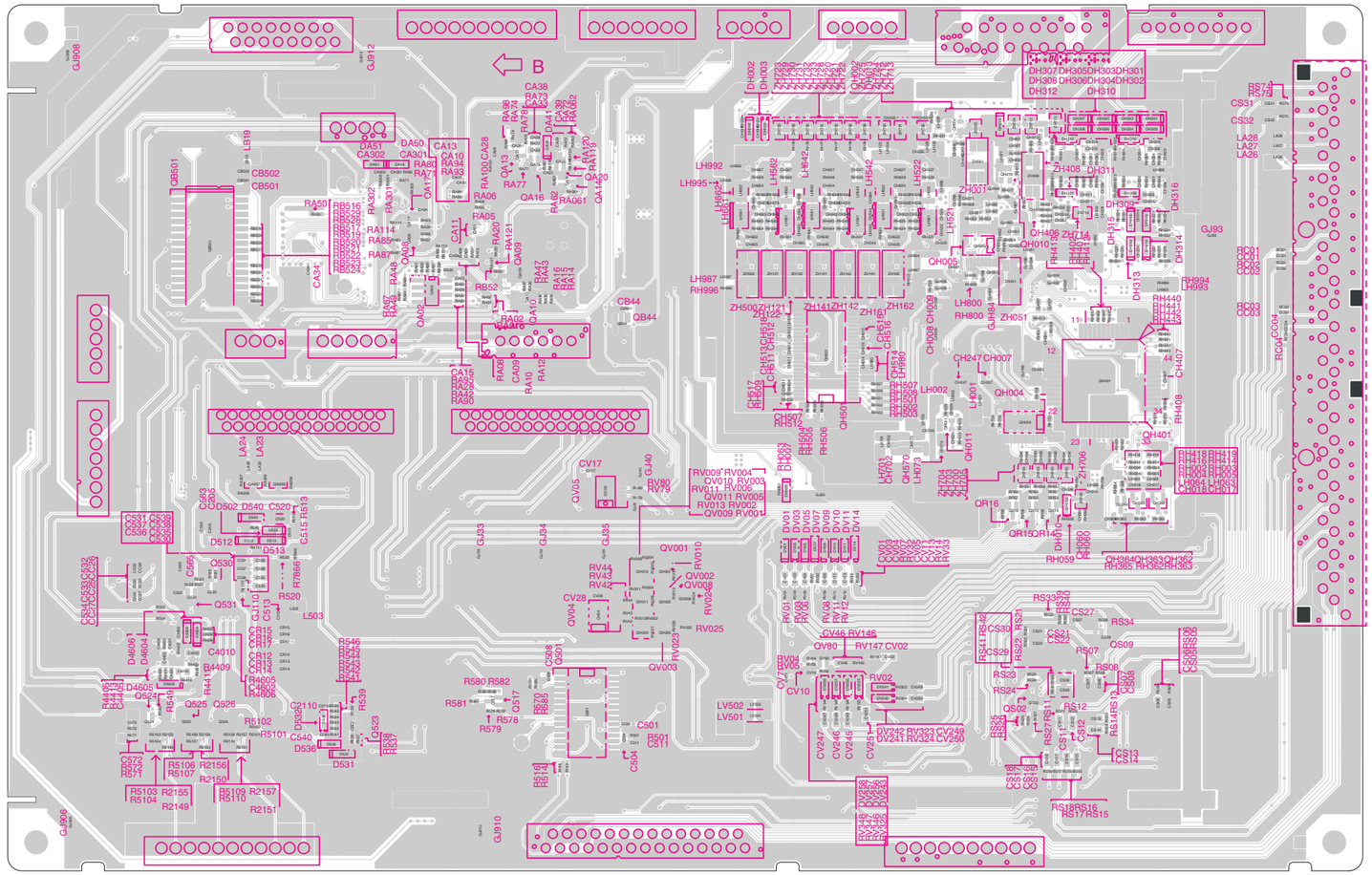
PICTURE TUBE

⚠ V901R	#1	23078429	OTHER BLOCK, COUPLING R
⚠	#2	23078361	OTHER, COUPLING R
⚠ V902G	#1	23078430	OTHER BLOCK, COUPLING G
⚠	#2	23078358	OTHER, COUPLING G
⚠ V903B	#1	23078431	OTHER BLOCK, COUPLING B
⚠	#2	23078362	OTHER, COUPLING B

Location No.		Parts No.	Description
TUNER			
⚠ H001		23321495	TUNER, US864M IIC PH 5V PANA ENV56DF3G3F
ACCESSORIES			
A701	#1	23067099	CARTON, CARTON
	#2	23067100	CARTON, CARTON
A703	#1	23946479	PACKING, TOP PACKING
	#2	23946481	PACKING, TOP PACKING
A708	#1	23946478	PACKING, BOTTOM PACKING
	#2	23946480	PACKING, BOTTOM PACKING
A709	#1	23946483	PACKING, BOTTOM TRAY
	#2	23946187	PACKING, BASE TRAY
⚠ K912		23306562	REMOCON HAND UNIT IR, DTVUSA CT-90216
⚠ Y101		23566378	OWNERS MANUAL, ENGLISH 51H94
⚠ Y101F		23566379	OWNERS MANUAL, FRENCH 51H94
CABINET PARTS			
⚠ A001	#1	23429055	CABINET, WOOD CABI SHIP
⚠	#2	23429091	CABINET, WOOD CABINET SHIP
A102	#1	23527268	GRILLE, SPEAKER GRILLE 51 REG
	#2	23527269	GRILLE, SPEAKER GRILLE 57 REG
A160		23469228	CASTER, TP50H60
⚠ A201	#1	23530779	COVER, BEZEL
⚠	#2	23532728	COVER, BEZEL ASSEY
A202		23450836	PANEL, CONTROL PANEL ASSEY
A213		23428201	DOOR, DOOR
A215		23929911	PIECE, SNAP-IN GEAR DAMPER CONNON
A222		23929910	PIECE, FILTER
A223		23445705	BUTTON, POWER BUTTON
A268	#1	23530772	COVER, FRONT COVER
	#2	23530770	COVER, FRONT COVER
A331	#1	23929897	PIECE, POLE BOTTOM LEFT
	#2	23929899	PIECE, POLE BOTTOM LEFT
A332	#1	23929898	PIECE, POLE BOTTOM RIGHT
	#2	23929900	PIECE, POLE BOTTOM RIGHT
⚠ A401	#1	23530781	COVER, BACK COVER
⚠	#2	23429132	CABINET, BACK COVER ASSEY
⚠ A421		23530812	COVER, REAR BOARD
⚠ A424		23429059	CABINET, BACK BOARD
A510		23030815	SCREW, WOOD, PTD #6 X 3/4
A721		23943628	PLYETHLENE COVERING 46GM88T

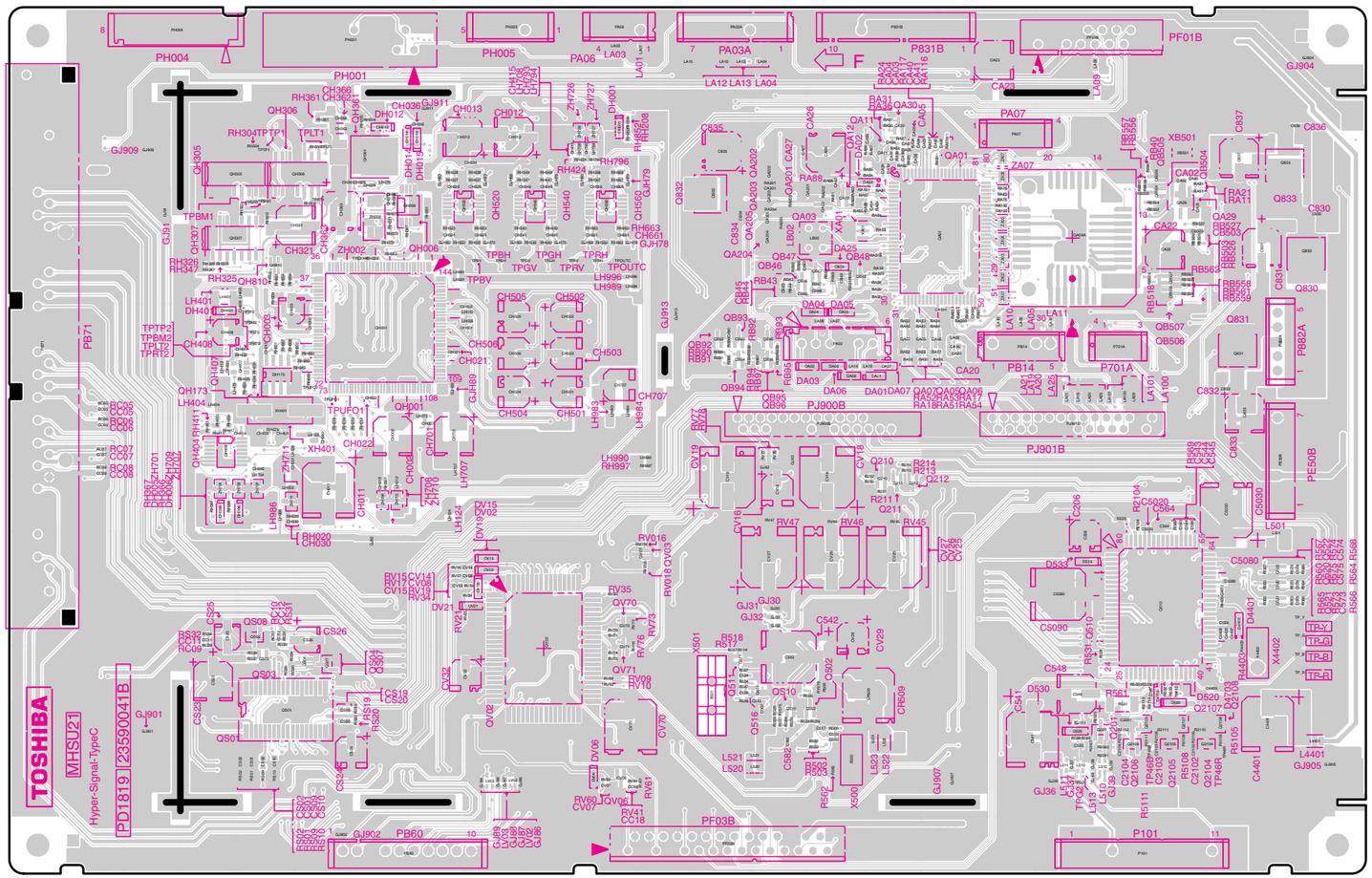
SCAN CONVERTER MODUL, MHSU21 PD1819 (U001)

BOTTOM (FOIL) SIDE



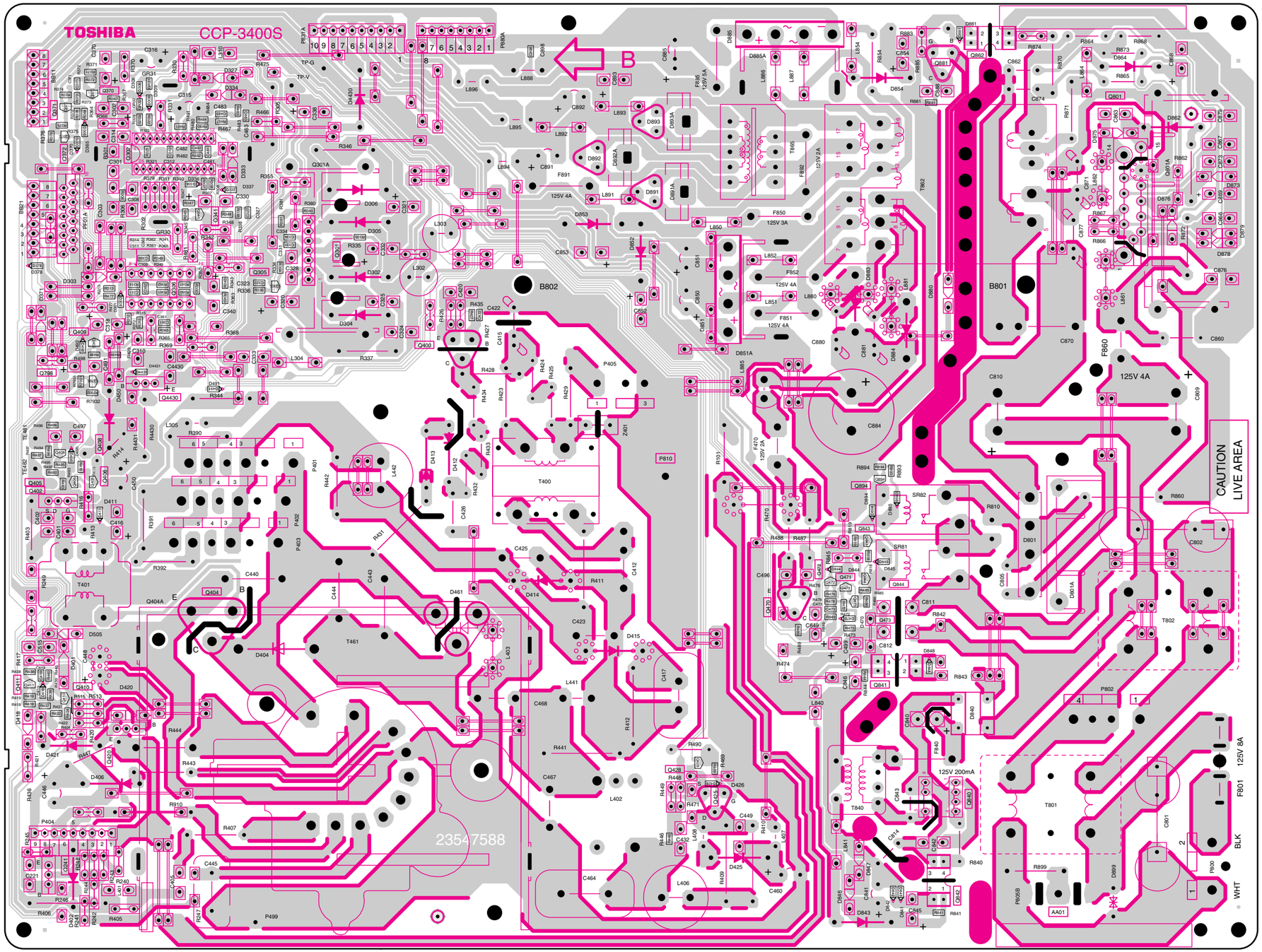
SCAN CONVERTER MODUL, MHSU21 PD1819 (U001)

TOP (COMPONENT) SIDE



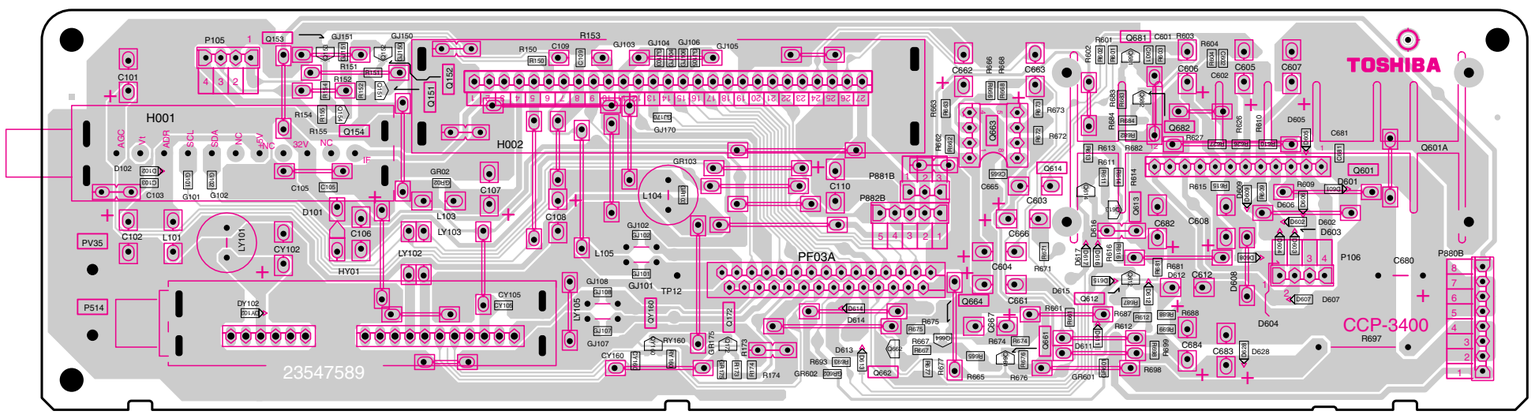
DEFPOWER BOARD (51H94:PD1730H 57H94:PD1730J) (U401)

BOTTOM (FOIL) SIDE



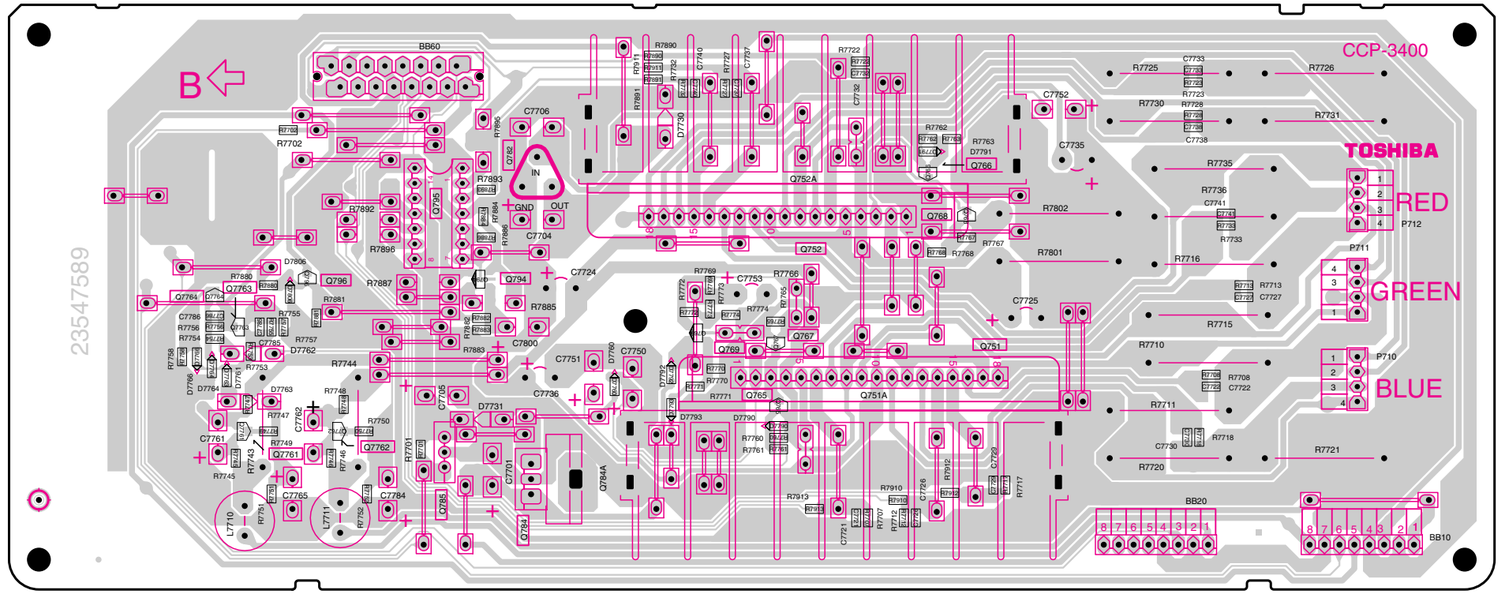
IF/AUDIO BOARD PD1731B2 (U601)

BOTTOM (FOIL) SIDE



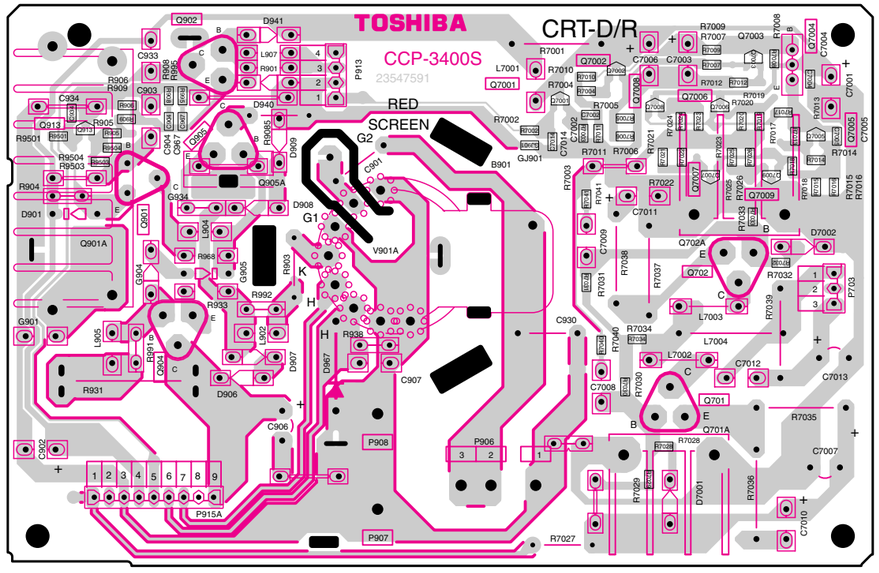
CONVER BOARD PD1731B1 (U711)

BOTTOM (FOIL) SIDE



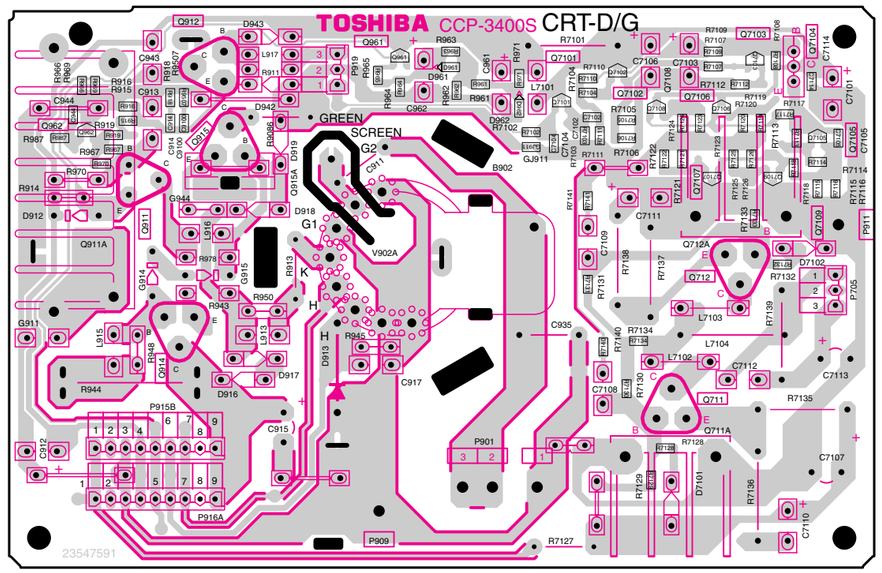
CRT/SVM/R BOARD PD1733D1 (E031Z)

BOTTOM (FOIL) SIDE



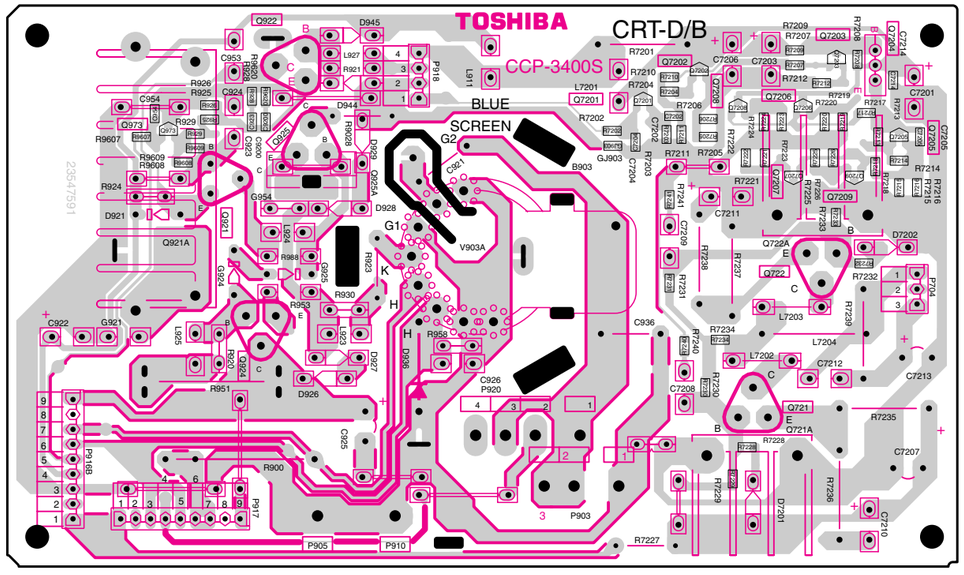
CRT/SVM/G BOARD PD1733D2 (E032Z)

BOTTOM (FOIL) SIDE



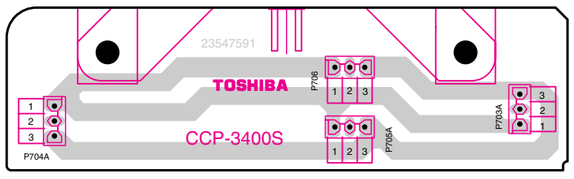
CRT/SVM/B BOARD PD1733D3 (E033Z)

BOTTOM (FOIL) SIDE



SVM/DIV BOARD PD1733D4 (E034Z)

BOTTOM (FOIL) SIDE

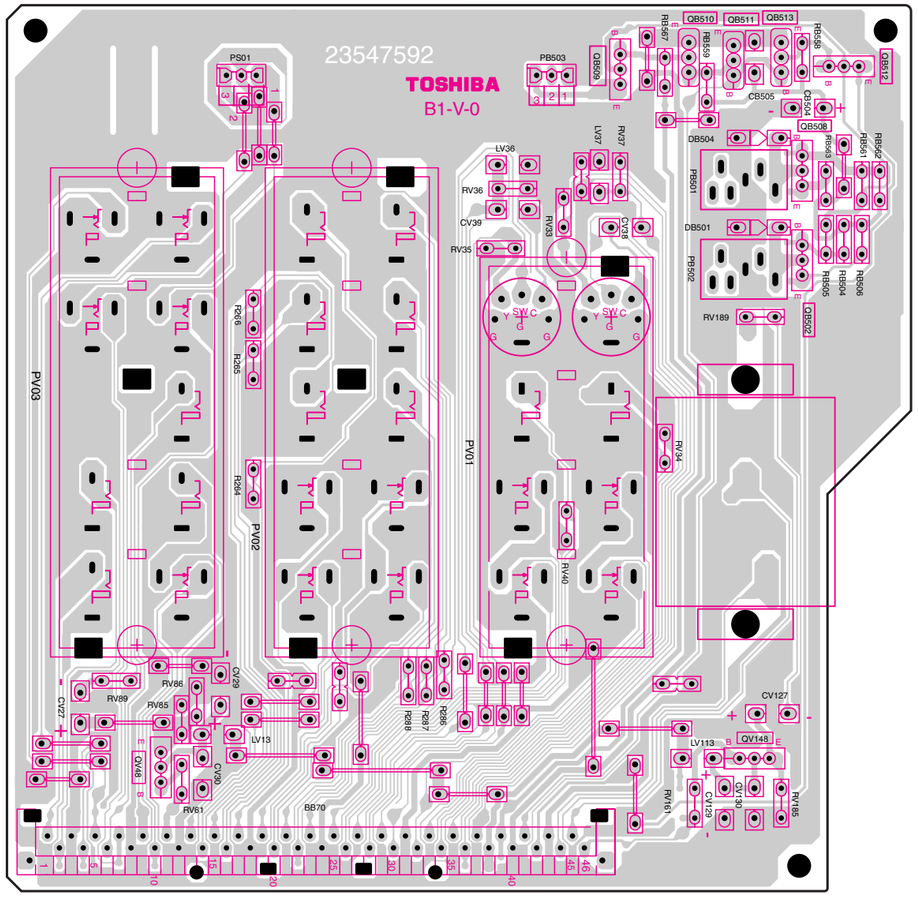


CONV-SEN BOARD PD0079 (E051Z-E054Z)

BOTTOM (FOIL) SIDE

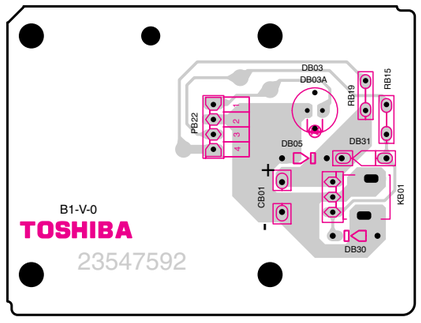
BACK/AV BOARD PD1735B1 (E021Z)

BOTTOM (FOIL) SIDE



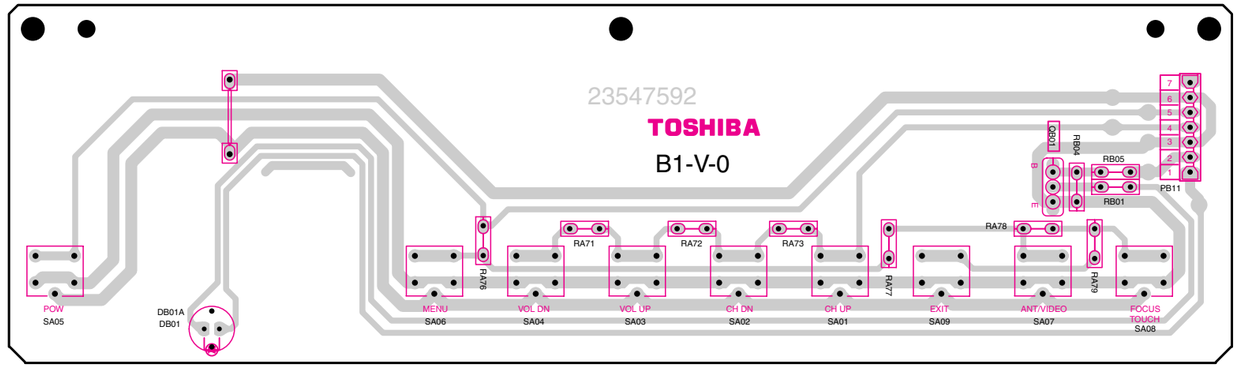
REMOTE BOARD PD1735B4 (E024Z)

BOTTOM (FOIL) SIDE



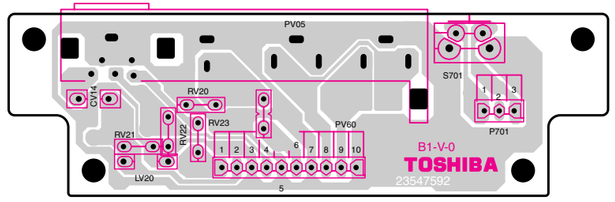
FRONT-CON BOARD PD1735B2 (E022Z)

BOTTOM (FOIL) SIDE



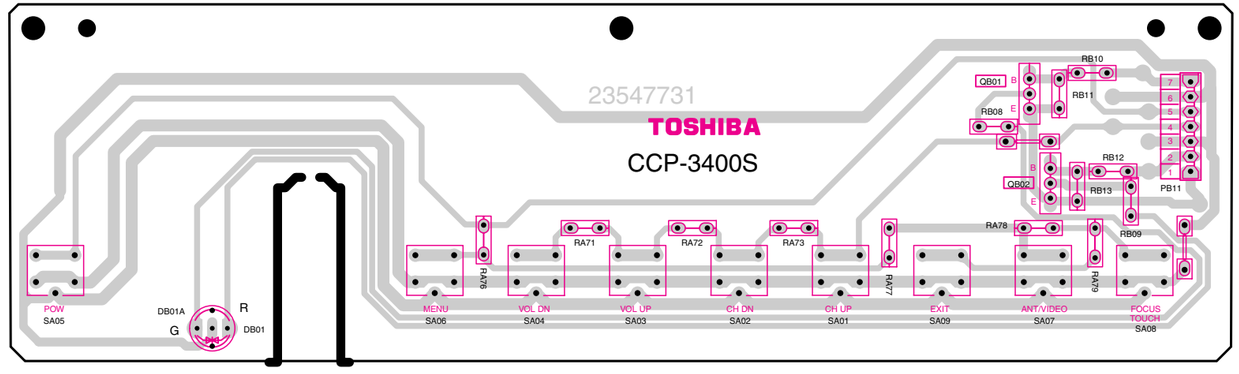
FRONT IN BOARD PD1735B3 (E023Z)

BOTTOM (FOIL) SIDE



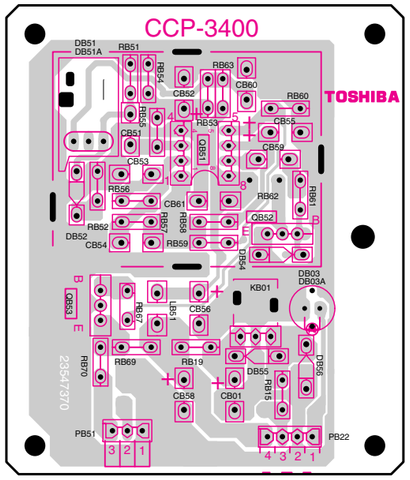
FRONT CONT BOARD PD1971A (UB11)

BOTTOM (FOIL) SIDE



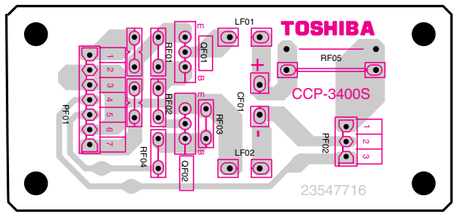
IR BLASTER BOARD PD1289 (E045Z)

BOTTOM (FOIL) SIDE



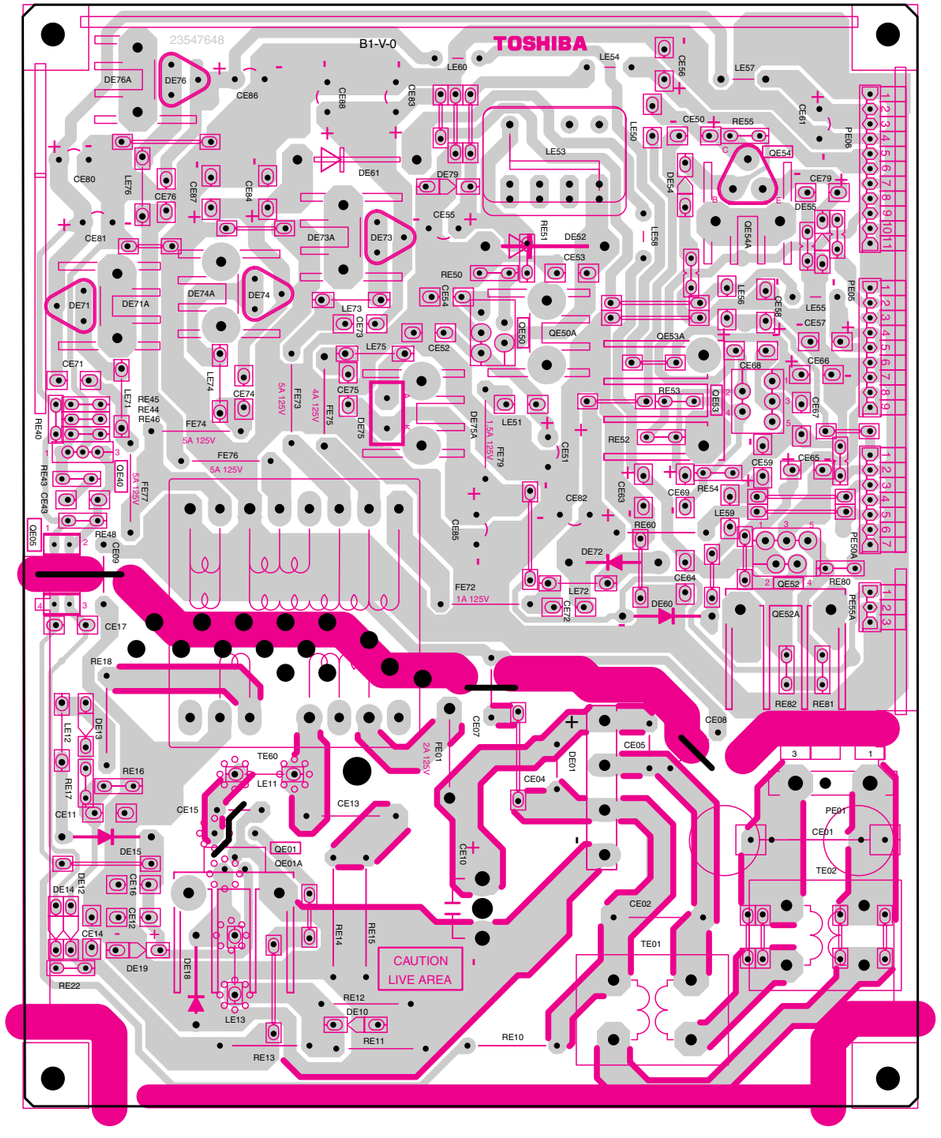
FAN UNIT BOARD PD1953A (UF01)

BOTTOM (FOIL) SIDE



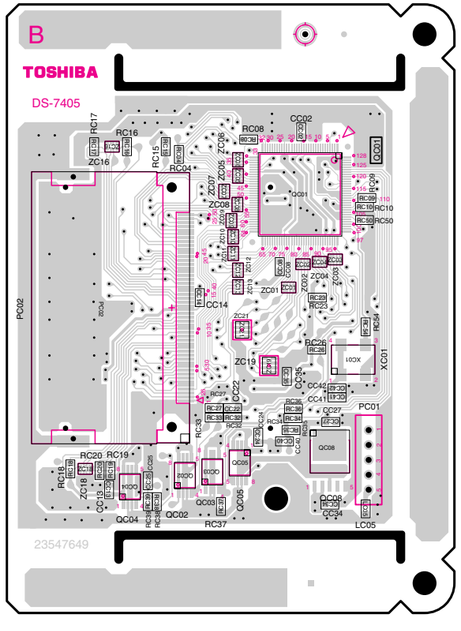
SUB POWER BOARD PD1820A (UE01)

BOTTOM (FOIL) SIDE



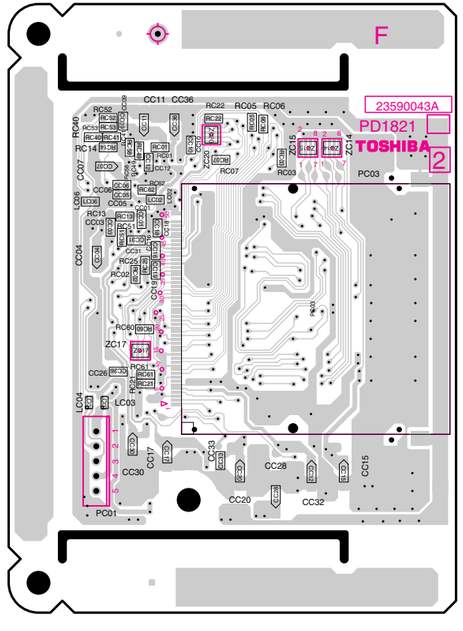
MULTICARD BOARD PD1821A (UC01)

BOTTOM (FOIL) SIDE



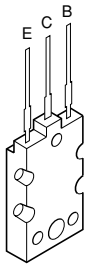
MULTICARD BOARD PD1821A (UC01)

TOP (COMPONENT) SIDE



TERMINAL VIEW OF TRANSISTORS

① 2SC5144
2SC5859



② 2SC3852
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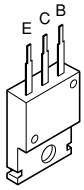
2SA1788
2SA1306
2SA1186A



③ 2SC752GTM
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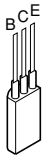
2SC4721P



④ 2SC752
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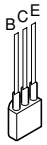
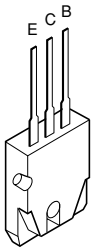
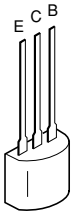
2SA1015
2SC1815
2SC2878
2SC1740S
2SC2120
2SA9335



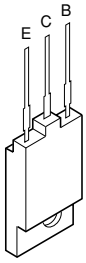
⑤ 2SA1788



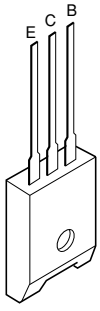
⑥ RN2203
RN2201
RN2004
RN1203
RN1204
RN2204
RN1205
RN1202
RN1201



⑦ 2SD1554
2SD2253
2SD1556
2SD2553
2SC5143



⑧ ON4409



SCHEMATIC DIAGRAM

MODEL : 51H94/57H94

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON THE MANUAL FOR THIS MODEL.

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NOTE:

1. RESISTOR Resistance is shown in ohm [K = 1.000, M = 1.000.000]. All resistors are 1/6W and 5% tolerance carbon resistor, unless otherwise noted as the following marks.
   1/2R = Metal or Metal oxide of 1/2 watt
   1/2S = Carbon compsistion of 1/2 watt
   1RF = Fuse resistor of 1 watt
   10W = Cement of 10 watt
   K = ±10% G = ±2% F = ±1%
2. CAPACITOR Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF, and the values more than 1 in pF.
   All capacitors are ceramic 50V, unless otherwise noted as the following marks.
   Electolytic capacitor
   Mylar capacitor
3. The parts indicated with "⚠" have special characteristics, and should be replaced with identical parts only.
4. Voltages read with DIGITAL MULTI-METER from point indicated to chassing ground, using a color bar signal with all controls at normal, line voltage at 220 volts.
5. Waveforms are taken receiving color bar signal with enough sensitivity.
6. Voltage reading shown are nominal values and may vary ±20% except H.V.

■ **SCHEMATIC DIAGRAM STRUCTURE:**

AUDIO SELECT — (HYPER SIGNAL) 1/58
FRONT AV — (FRONT CONTROL) [SHEET-1/2] 2/58
(FRONT IN/REMOTE) [SHEET-2/2] 3/58
BACK AV — (1/2) [SHEET-1/2] 4/58
(IR BLASTER) [SHEET-2/2] 5/58
CONVER IF AUDIO — (1/4) [SHEET-1/4] 6/58
(CONVER OUT) [SHEET-2/4] 7/58
(IF) [SHEET-3/4] 8/58
(SOUND) [SHEET-4/4] 9/58
CONNECTION — (HS AV) 10/58
CRT-D SVM — (B) [SHEET-1/2] 11/58
(R, G) [SHEET-2/2] 12/58
DEF POWER — (CONNECTION) [SHEET-1/3] 13/58
(DEF) [SHEET-2/3] 14/58
(POWER) [SHEET-3/3] 15/58
FAN CONTROL 16/58
IR BLA OUT 17/58
MULTI CARD — (1/4) [SHEET-1/4] 18/58
(2/4) [SHEET-2/4] 19/58
(3/4) [SHEET-3/4] 20/58
(4/4) [SHEET-4/4] 21/58
REGULATOR — (HYPER SIGNAL) 22/58
SUB POWER — (1/2) [SHEET-1/2] 23/58
(2/2) [SHEET-2/2] 24/58
HYPER SIGNAL — (BACK AV SOCKET) [SHEET-1/34] 25/58
(AV1) [SHEET-2/34] 26/58
(AV2) [SHEET-3/34] 27/58
(AUDIO SWITCH) [SHEET-4/34] 28/58
(AV3) [SHEET-5/34] 29/58
(6/34) [SHEET-6/34] 30/58
(7/34) [SHEET-7/34] 31/58
(8/34) [SHEET-8/34] 32/58
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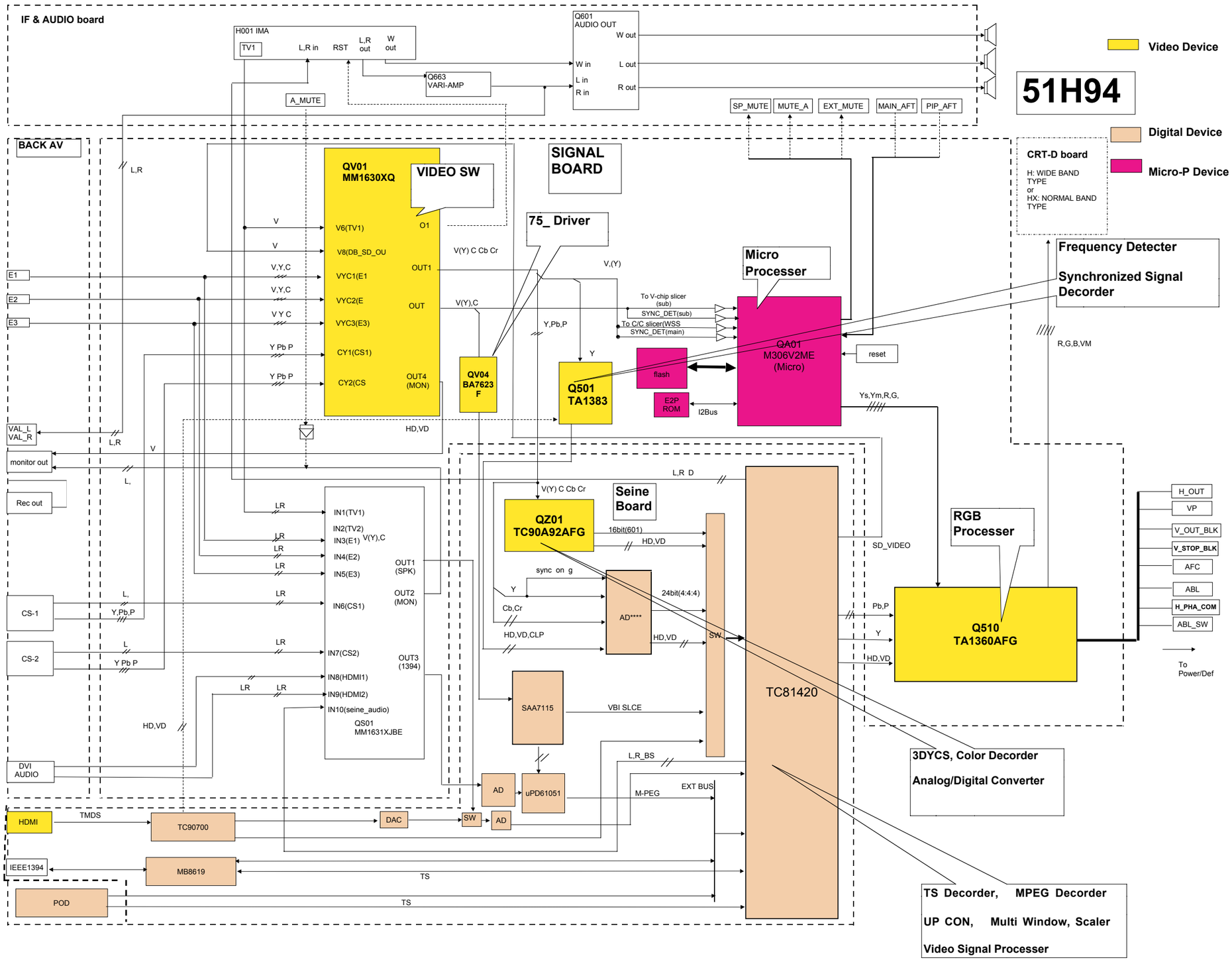
(MICON7) [SHEET-16/34] 40/58
(MICON8) [SHEET-17/34] 41/58
(MICON9) [SHEET-18/34] 42/58
(REGULATOR) [SHEET-19/34] 43/58
(MAICON9) [SHEET-20/34] 44/58
(DIGITAL-CONVER1) [SHEET-21/34] 45/58
(DIGITAL-CONVER2) [SHEET-22/34] 46/58
(DIGITAL-CONVER3) [SHEET-23/34] 47/58
(DIGITAL-CONVER4) [SHEET-24/34] 48/58
(DIGITAL-CONVER5) [SHEET-25/34] 49/58
(DIGITAL-CONVER6) [SHEET-26/34] 50/58
(DIGITAL-CONVER7) [SHEET-27/34] 51/58
(DIGITAL-CONVER8) [SHEET-28/34] 52/58
(CONVER-REG) [SHEET-29/34] 53/58
(30/34) [SHEET-30/34] 54/58
(31/34) [SHEET-31/34] 55/58
(32/34) [SHEET-32/34] 56/58
(33/34) [SHEET-33/34] 57/58
(34/34) [SHEET-34/34] 58/58

CIRCUIT BLOCK DIAGRAM



Specifications

NOTE:

- ***This model complies with the specifications listed below.***
- ***Designs and specifications are subject to change without notice.***
- ***This model may not be compatible with features and/or specifications that may be added in the future.***

Television System

NTSC standard
ATSC standard (8VSB)
Digital Cable (64 QAM, 256 QAM; in-the-clear, unencrypted*)

**Encrypted channels can be viewed on this TV using a CableCARD. See page 12 for details.*

Channel Coverage

VHF: 2 through 13
UHF: 14 through 69
Cable TV: Mid band (A-8 through A-1, A through I)
Super band (J through W)
Hyper band (AA through ZZ, AAA, BBB)
Ultra band (65 through 94, 100 through 125)

Power Source

120 V AC, 60 Hz

Power Consumption

220 W (average)
45 W in standby mode (power cord plugged in and power OFF)

Audio Power

15 W + 15 W

Speaker Type

Two 6-5/16 inches (16 cm) round

Video/Audio Terminals

S-VIDEO INPUT:
Y : 1 V(p-p), 75 ohm, negative sync.
C : 0.286 V(p-p) (burst signal), 75 ohm

VIDEO/AUDIO INPUT:
VIDEO: 1 V(p-p), 75 ohm, negative sync.
AUDIO: 150 mV(rms) (30% modulation equivalent, 22 k ohm or greater)

ColorStream® (component video) HD INPUT:
Y : 1V(p-p), 75 ohm
PR: 0.7 V(p-p), 75 ohm
PB: 0.7 V(p-p), 75 ohm
AUDIO: 150 mV(rms), 22 k ohm or greater
Suggested resolutions: 1080i, 480p, 480i, 720p

NOTE: *This TV does not provide ColorStream HD OUTPUT.*

Video/Audio Terminals (continued)

HDMI™ INPUT:
HDMI compliant (type A connector)
HDCP compliant
E-EDID** compliant
Suggested scan rates: 1080i, 480p, 480i, 720p
HDMI Audio: 2-channel PCM; 32/44.1/48 kHz sampling frequency; 16/20/24 bits per sample

NOTE: *This TV does not provide HDMI OUTPUT.*

VIDEO/AUDIO OUTPUT (also for recording):
VIDEO: 1 V(p-p), 75 ohm, negative sync.
AUDIO: 150 mV(rms) (30% modulation equivalent, 2.2 k ohm or less)

VARIABLE AUDIO OUTPUT:
0–300 mV(rms) (30% modulation equivalent, 2.2 k ohm or less)

G-LINK™ and IR OUTPUT:
3 V(p-p), 3.5 mm mono socket (IR blaster cables supplied)

IEEE-1394 INPUT/OUTPUT:
IEEE-1394 compliant

Dimensions

51H94:	Width:	47-9/16 inches (1208 mm)
	Height:	50-1/2 inches (1283 mm)
	Depth:	22-1/2 inches (572 mm)
57H94:	Width:	52-3/4 inches (1340 mm)
	Height:	55-3/4 inches (1416 mm)
	Depth:	23-7/8 inches (606 mm)

Weight

51H94: 169 lbs (76.6 kg)
57H94: 204 lbs (92.5 kg)

Supplied Accessories

- Two dual-wand IR blaster cables
- Remote control with two size “AA” alkaline batteries

– END –

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN

SCHEMATIC DIAGRAM

MODEL : 51H94/57H94

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(30/34) [SHEET-30/34] 54/58
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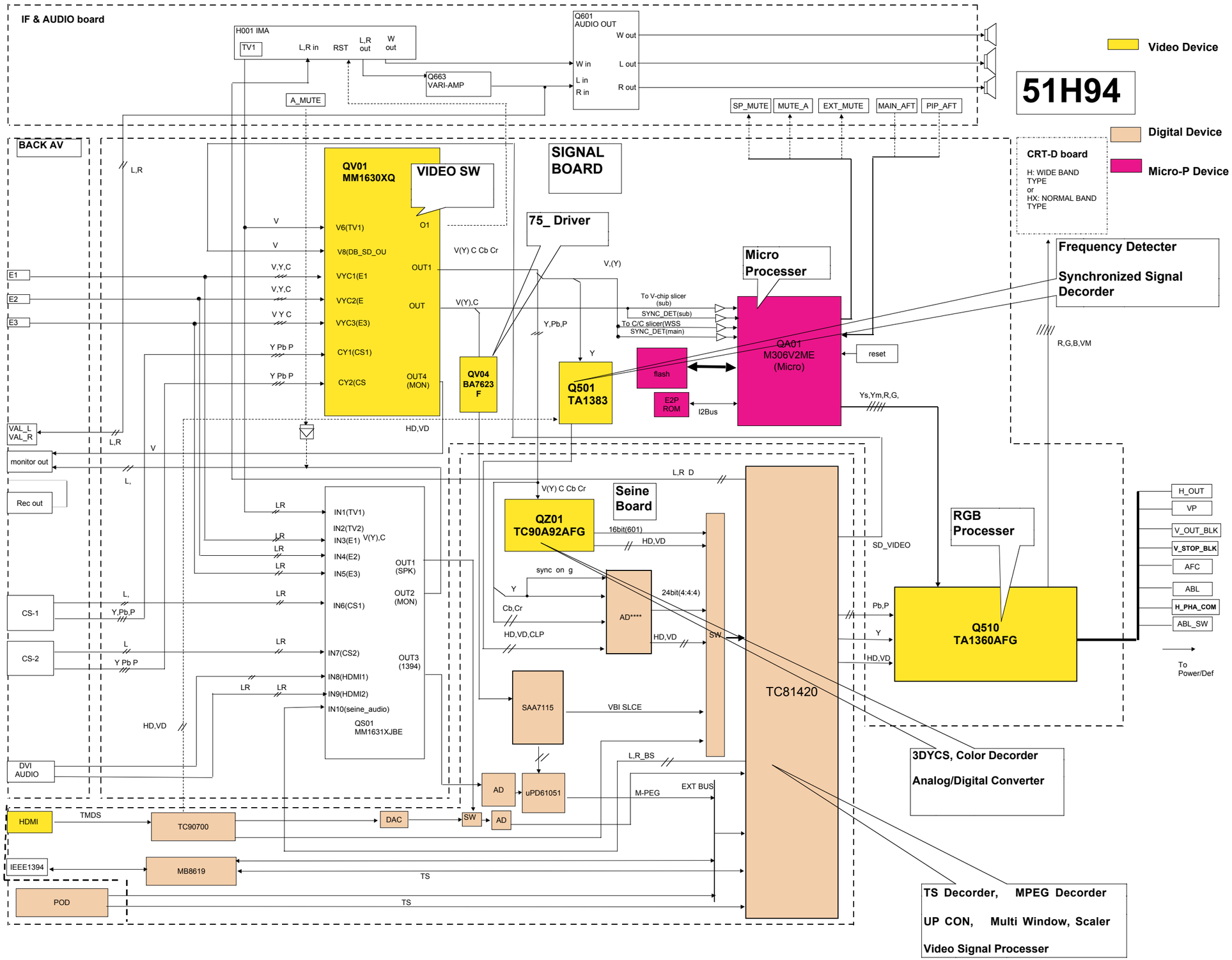
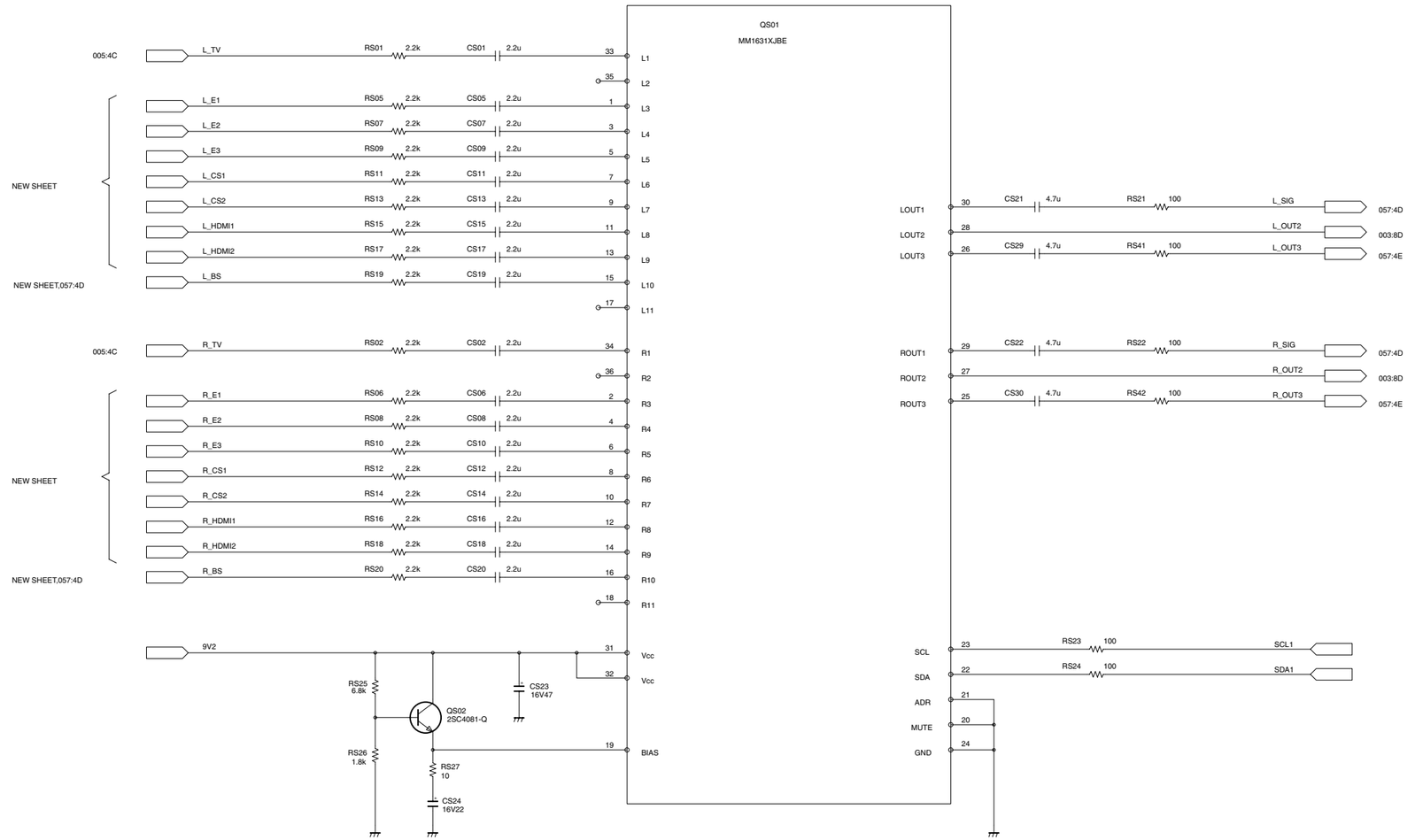
(32/34) [SHEET-32/34] 56/58
(33/34) [SHEET-33/34] 57/58
(34/34) [SHEET-34/34] 58/58

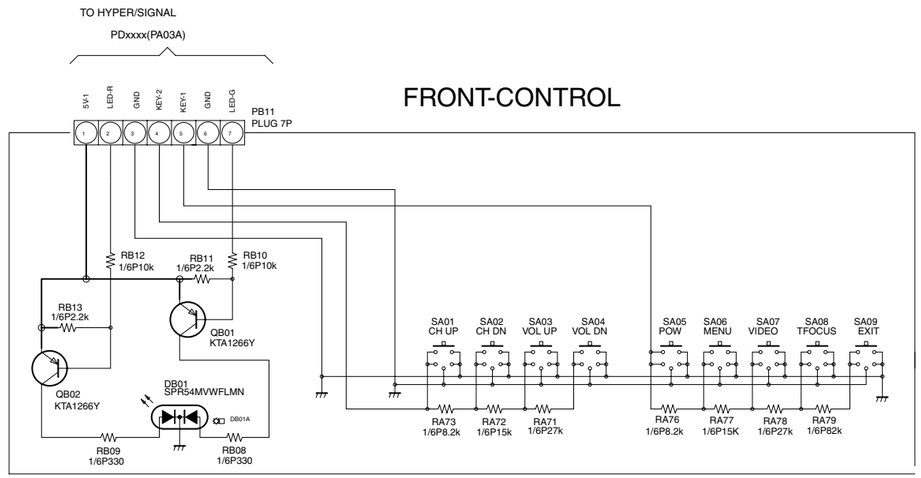
CIRCUIT BLOCK DIAGRAM





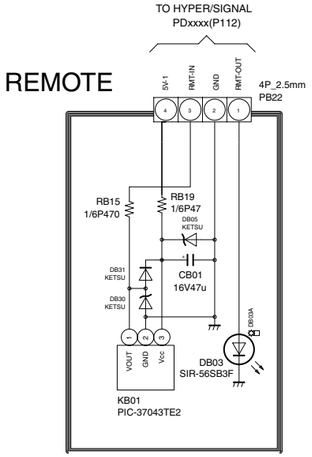
51H94/57H94
AUDIO SELECT (HYPER SIGNAL)

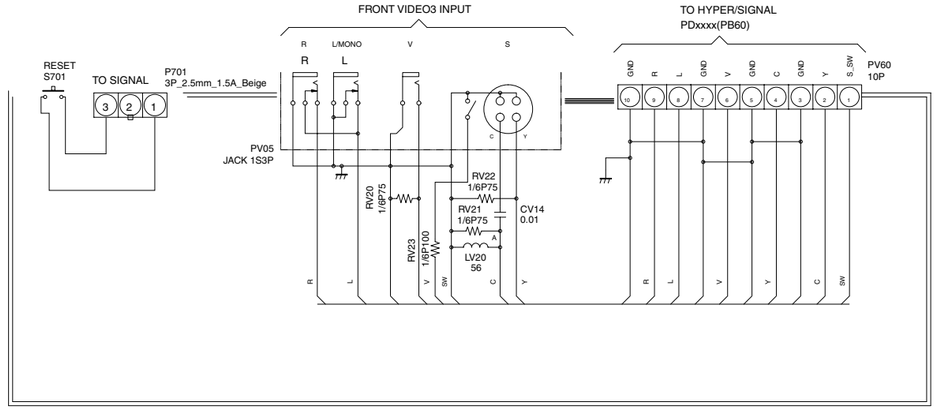
FRONT-CONTROL



51H94/57H94
FRONT AV (FRONT CONTROL)
SHEET-1/2

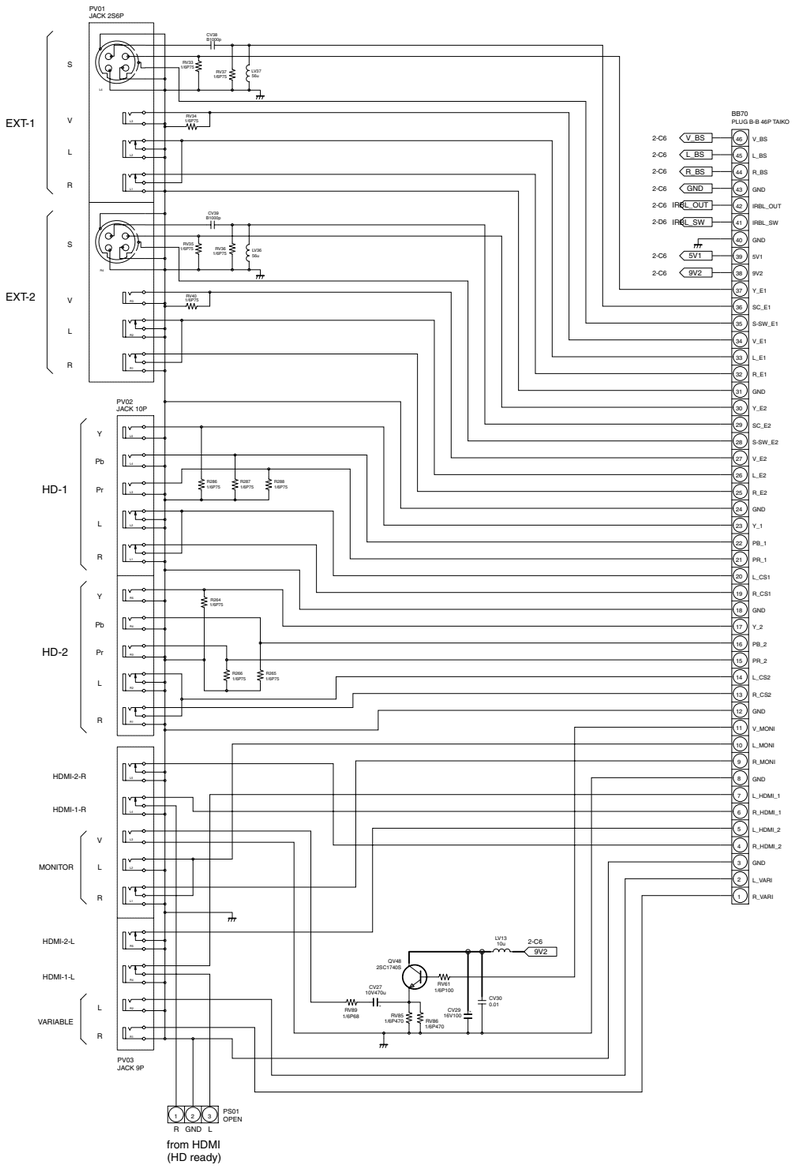
REMOTE



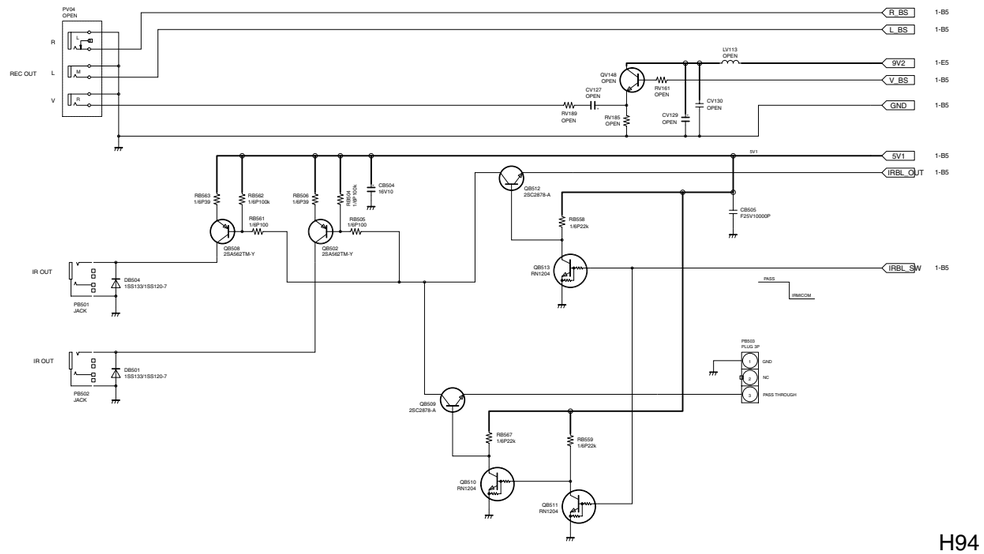


FRONT-IN

51H94/57H94
FRONT AV (FRONT IN/REMOTE)
SHEET-2/2



51H94/57H94
BACK AV (1/2)
SHEET-1/2



H94 series only

51H94/57H94
BACK AV (IR BLASTER)
SHEET-2/2

IF/AUDIO

PF03A
29FE-BT-VK-N

V_TV	1	V_TV	3-E5
TUNER GND	2	GND	
TVGND	3	TVGND	3-E5
TUNER GND	4	GND	
RESET_IMA	5	RESET_IMA	3-E5
V_TV2	6	V_TV2	3-B6
GND	7	GND	
TV2GND	8	TV2G	3-C6
R_TV	9	R_TV	3-E5
AFT2	10	AFT2	3-C6
AFT1	11	AFT1	3-E5
GND	12	GND	
L_TV	13	L_TV	3-E6
A_TV2	14	A_TV2	3-C6
GND	15	GND	
MUTE_A	16	MUTE_A	4-D8
R_AV	17	R_AV	3-E6
A_MUTE	18	A_MUTE	4-C2
GND	19	GND	
MUTE_E	20	MUTE_E	4-D8
L_AV	21	L_AV	3-E6
SP_MUTE	22	SP_MUTE	4-C8
GND	23	GND	
R_VARI	24	R_VARI	4-C2
SCL1	25	SCL1	3-D3
NC/10V	26	10V	4-C8
SDA1	27	SDA1	3-D3
L_VARI	28	L_VARI	4-C2
GND_A	29	GND_A	

to Hyp.SIGNAL

9V1	1	9V1	3-D3
GND	2	GND	
5V2	3	5V2	4-C2

P981B
3P_2.5mm_1.5A_BLACK

5V2	1	5V2	4-C2
GND	2	GND	
9V1	3	9V1	3-D3
GND	4	GND	
TUNER32V	5	TUNER32V	3-D3

P982B
PLUG 5P

TUNER32V	8	TUNER32V	3-D3
A_VCC	7	Audio Vcc	4-C8
	6	Audio Vcc	
	5	Audio Vcc	
GND_A	4	Audio GND	4-C8
	3	Audio GND	
	2	Audio GND	
11V_A	1	11V Audio	4-C8

P980B
8P_2.5mm_1.5A_Beige

to POWER/DEF

to Hyp.SIGNAL

(D-CONVER block)

BB60
BB 16P PLUG

RV	16	RV	2-F1
GH	15	GH	2-F1
BH	14	BH	2-F1
	13		
	12		
CONVER-5V	11	-5V	6-D1
	10		
	9		
RH	8	RH	2-E1
BV	7	BV	2-F1
GV	6	GV	2-F1
	5		
	4		
CONVER+16V	3		
CONVER+5V	2	5V	6-C1
CONV_RST	1	CONV_RST	2-B1

2-A8	-21V	1	CONVER-21V
		2	
2-A8	-16V	3	CONVER-16V
		4	
		5	CONVER+16V
1-B1	16V	6	PROTECT
2-A8	PROTECT	7	
2-A8	21V	8	CONVER+21V

BB10
BB 8P BASE SOCKET

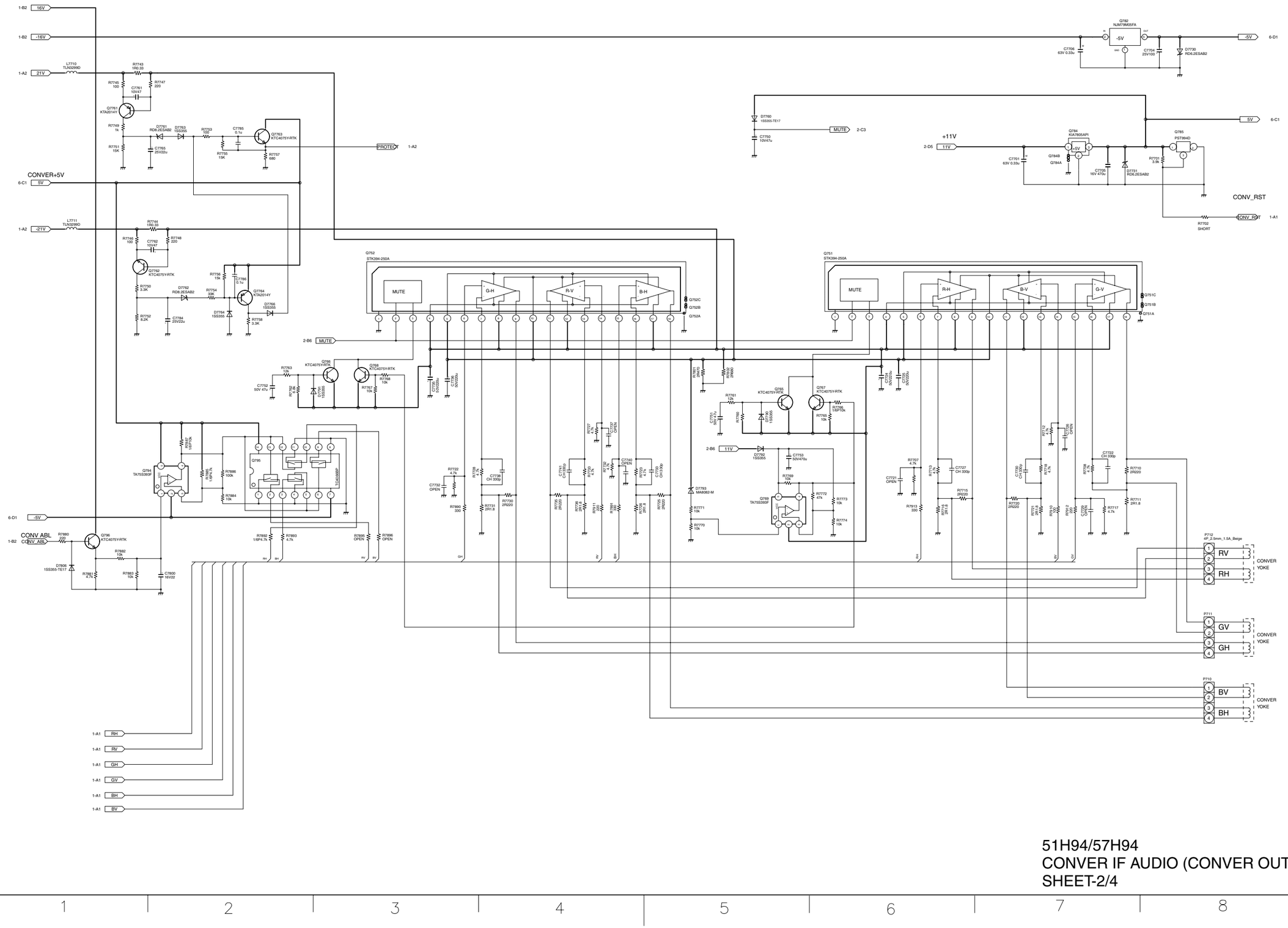
2-D5	11V	1	+11V
		2	GND
2-E1	CONV_ABL	3	CONV_ABL
		4	GND
		5	H_CONV
		6	AFC
		7	V_DF
		8	V_BLK

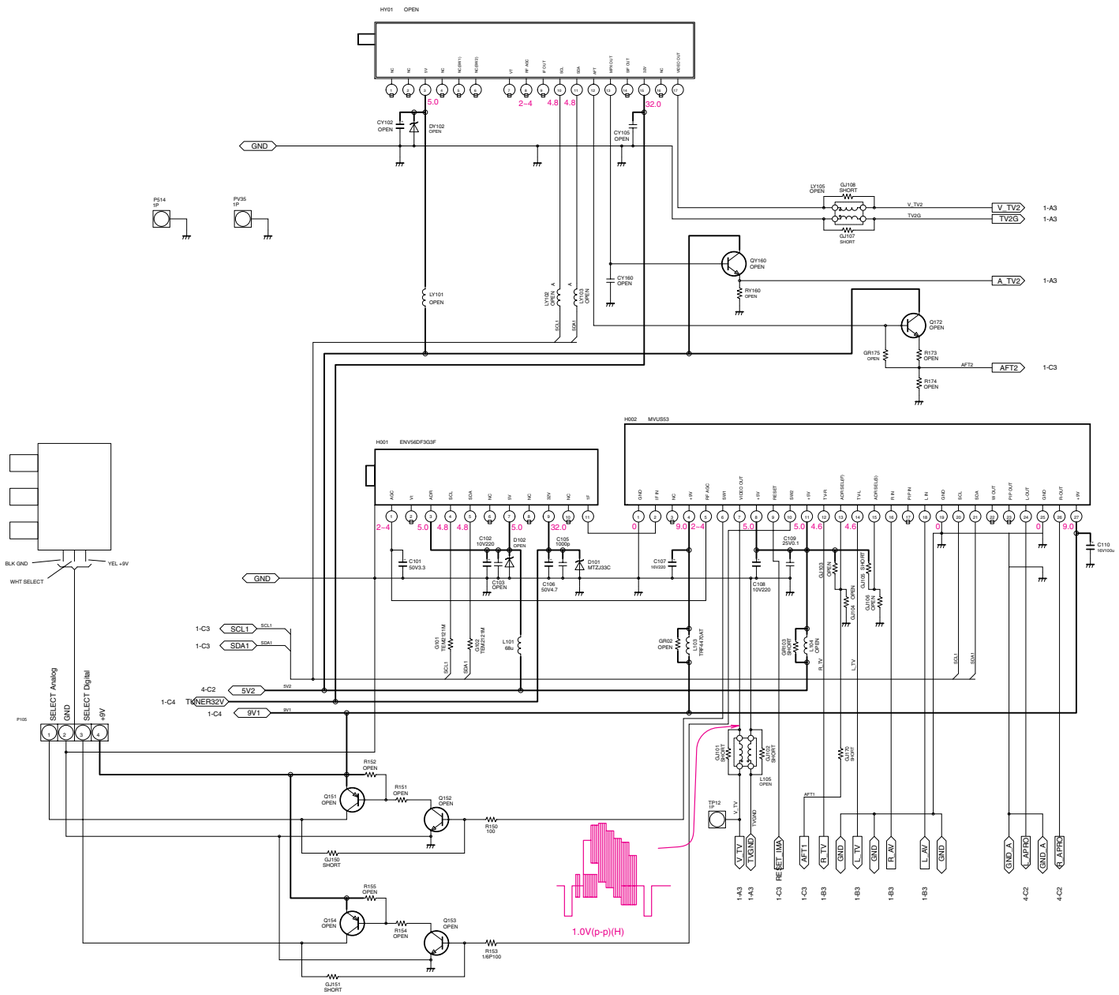
BB20
BB 8P BASE SOCKET

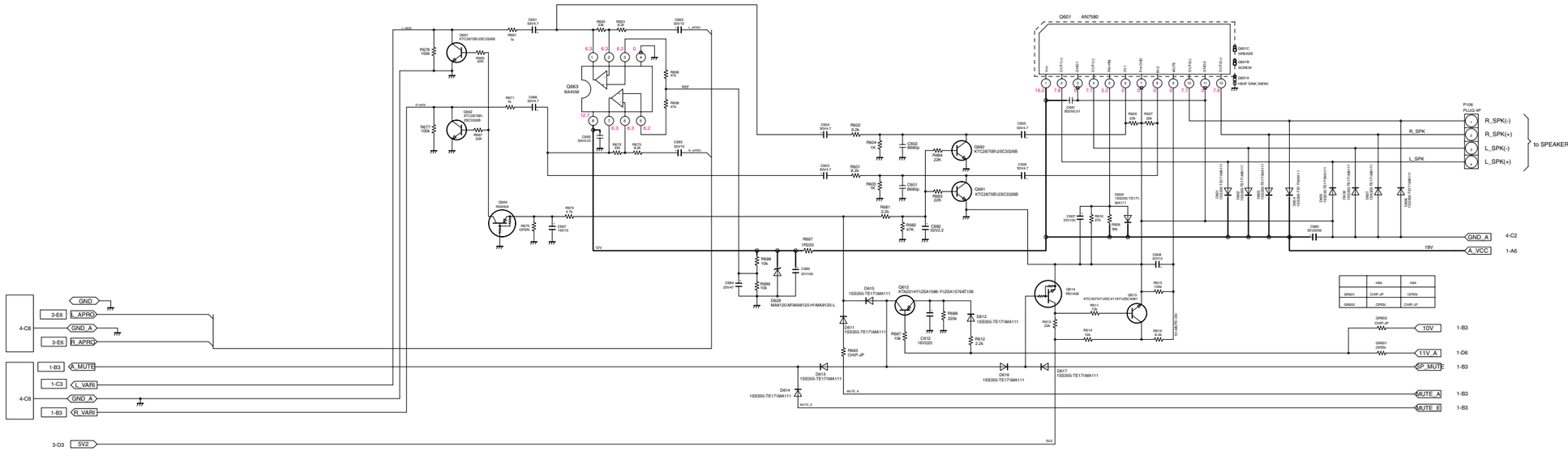
to POWER/DEF

CONVER OUT

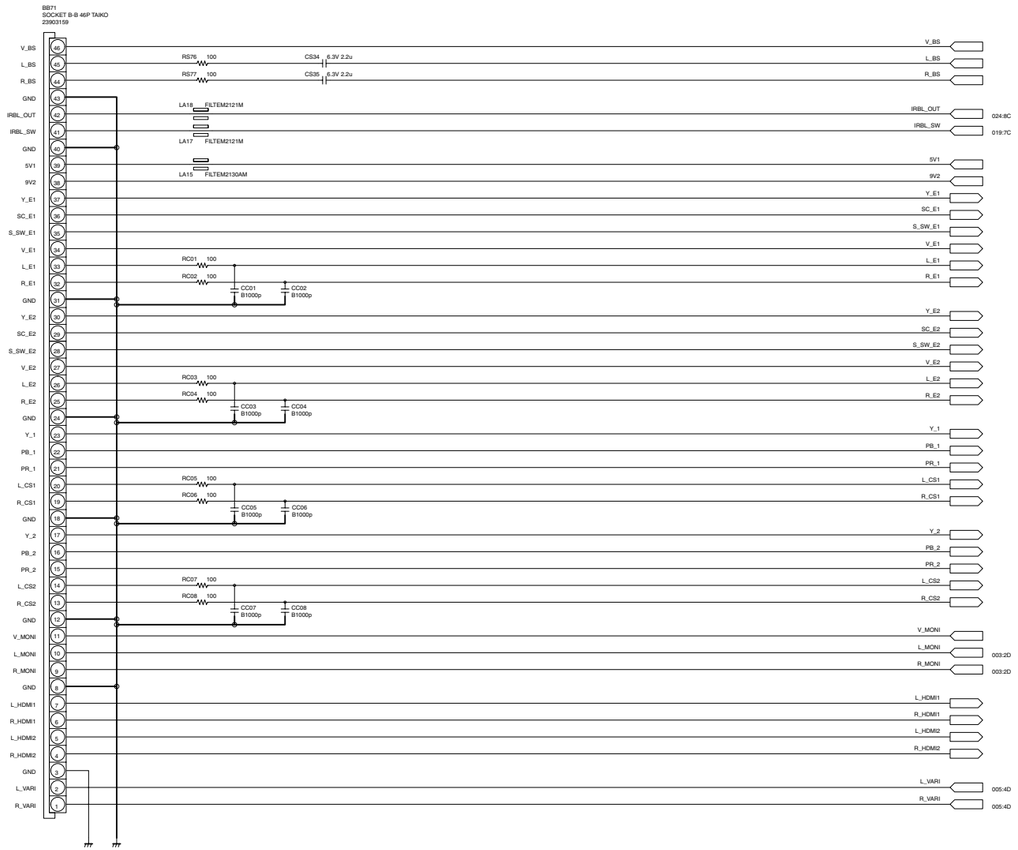
51H94/57H94
CONVER IF AUDIO (1/4)
SHEET-1/4


16V
-16V
21V
-21V
5V
-5V
11V
+11V
CONVER+5V
CONV ABL
CONV_RST
MUTE
PROTECT
SHORT
Q752
STK394-250A
Q751
STK394-250A
G-H
R-V
B-H
R-H
B-V
G-V
Q784
KIA7805API
Q782
NJM79M05FA
Q784A
Q784B
Q794
TA75393SF
Q796
KTC4075Y-RTK
Q795
TDA8566P
Q765
Q767
Q768
Q769
P712
4P_2.5mm_1.5A_Beige
P711
P710
RV
RH
GV
GH
BV
BH
CONVER YOKE
51H94/57H94
CONVER IF AUDIO (CONVER OUT)
SHEET-2/4
(7/58)


HY01 OPEN
CY102 OPEN
DY102 OPEN
CY103 OPEN
GND
LY105 OPEN
GJ106 SHORT
GJ107 SHORT
V_TV2
TV2G
1-A3
QY160 OPEN
RY160 OPEN
A_TV2
LY101 OPEN
CY160 OPEN
QY72 OPEN
GR175 OPEN
R373 OPEN
R374 OPEN
AFT2
1-C3
H001 ENV54DF3G3F
H002 MVUS53
C102 10V220
D102 OPEN
C105 10V33
DY01 MTZJ33C
C101 50V3.3
C103 OPEN
C106 50V4.7
C107 16V33
C109 25V0.1
C108 16V220
C110 16V10u
GJ101 SHORT
GJ102 SHORT
GJ103 SHORT
GJ104 SHORT
GJ105 SHORT
GJ106 SHORT
1-C3 SCL1
1-C3 SDA1
4-C2 5V2
1-C4 TUNER32V
1-C4 9V1
GY01 10K-4.7M
GY02 10K-4.7M
L101 68
GR02 OPEN
L103 10K-4.7M
R105 OPEN
R106 OPEN
R107 OPEN
R108 OPEN
L104 OPEN
L105 OPEN
L106 OPEN
R109 OPEN
R110 OPEN
R111 OPEN
R112 OPEN
R113 OPEN
R114 OPEN
R115 OPEN
R116 OPEN
R117 OPEN
R118 OPEN
R119 OPEN
R120 OPEN
R121 OPEN
R122 OPEN
R123 OPEN
R124 OPEN
R125 OPEN
R126 OPEN
R127 OPEN
R128 OPEN

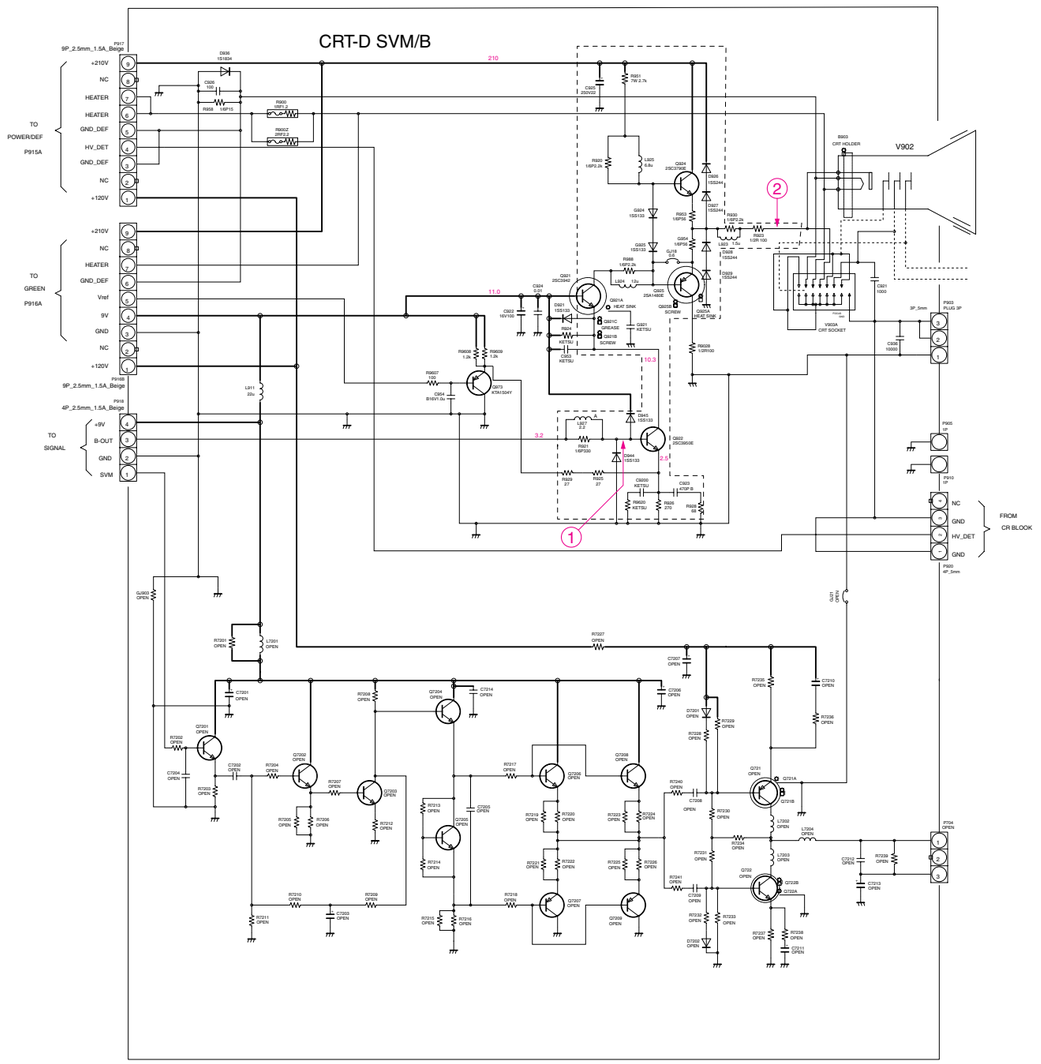


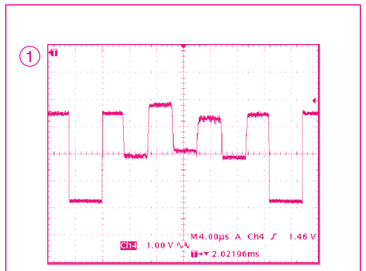
51H94/57H94
CONVER IF AUDIO (SOUND)
SHEET-4/4

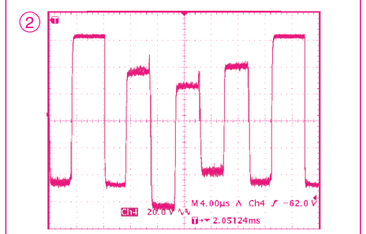


51H94/57H94
CONNECTION (HS AV)

CRT-D SVM/B

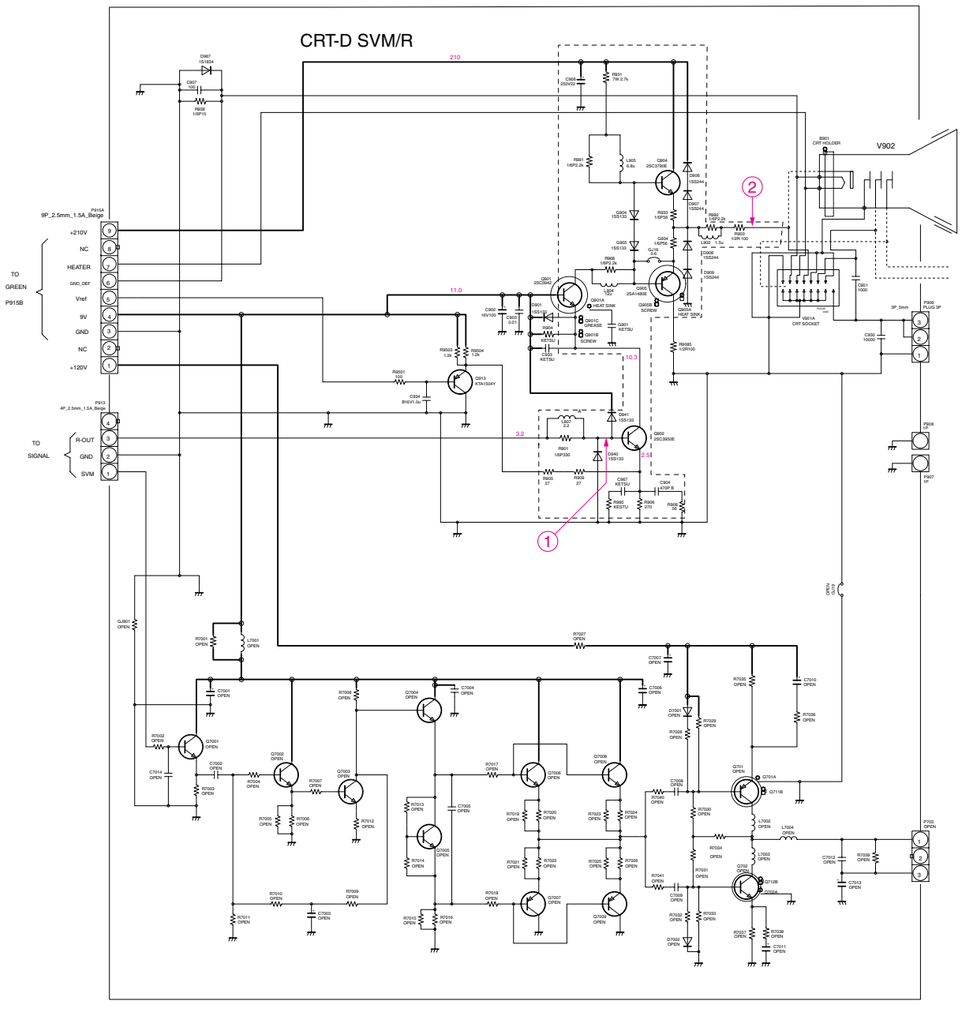




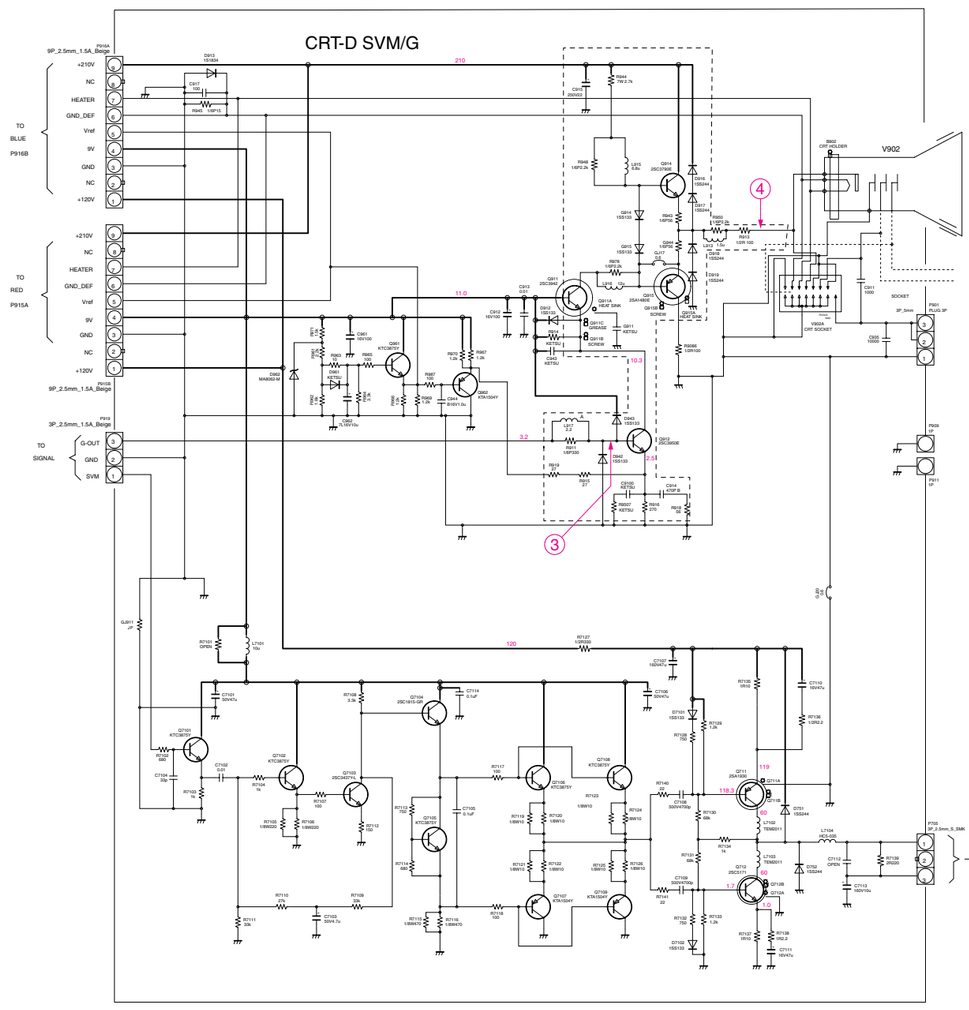


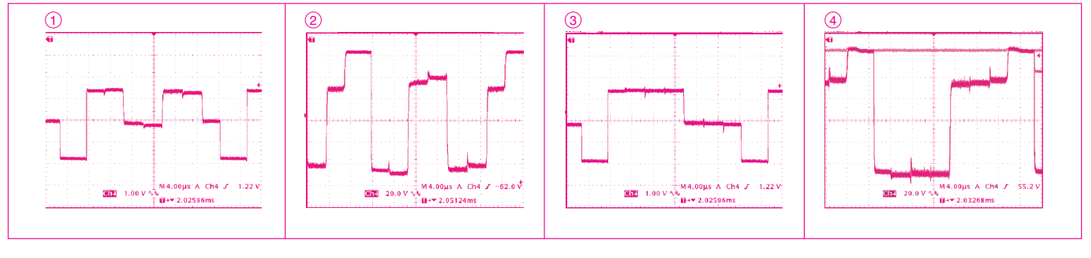
51H94/57H94
CRT-D SVM (B)
SHEET-1/2

CRT-D SVM/R



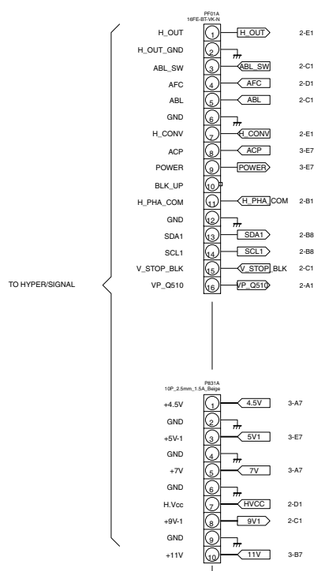
CRT-D SVM/G

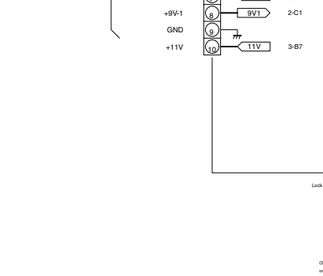


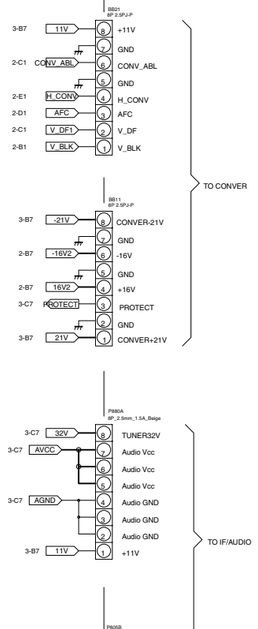


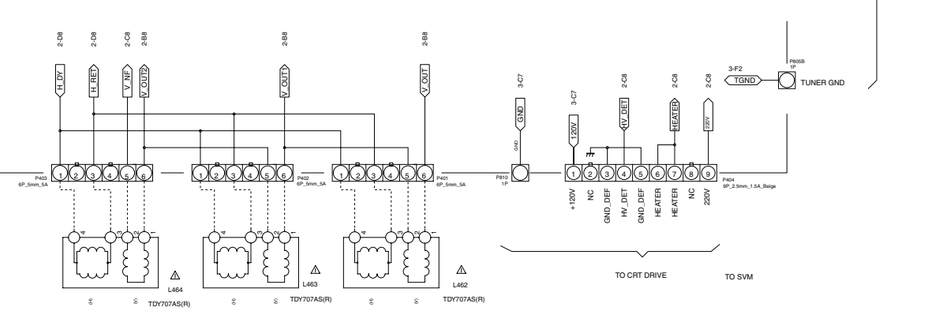
51H94/57H94
CRT-D SVM (R, G)
SHEET-2/2

DEF/POWER









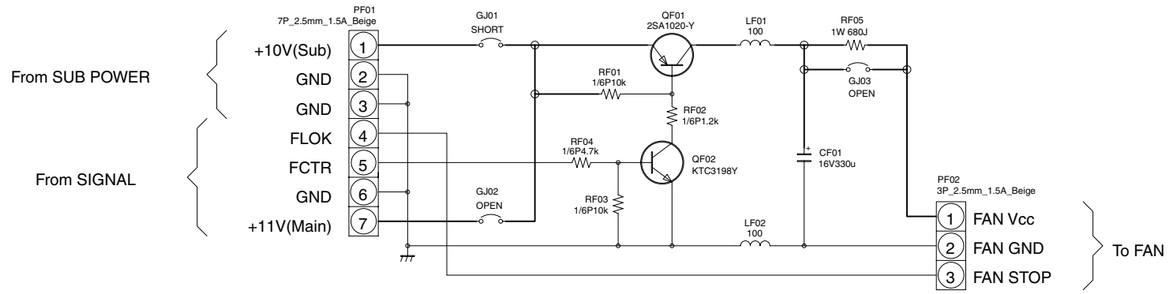
51H94/57H94
DEF POWER (CONNECTION)
SHEET-1/3

51H94/57H94
DEF POWER (DEF)
SHEET-2/3

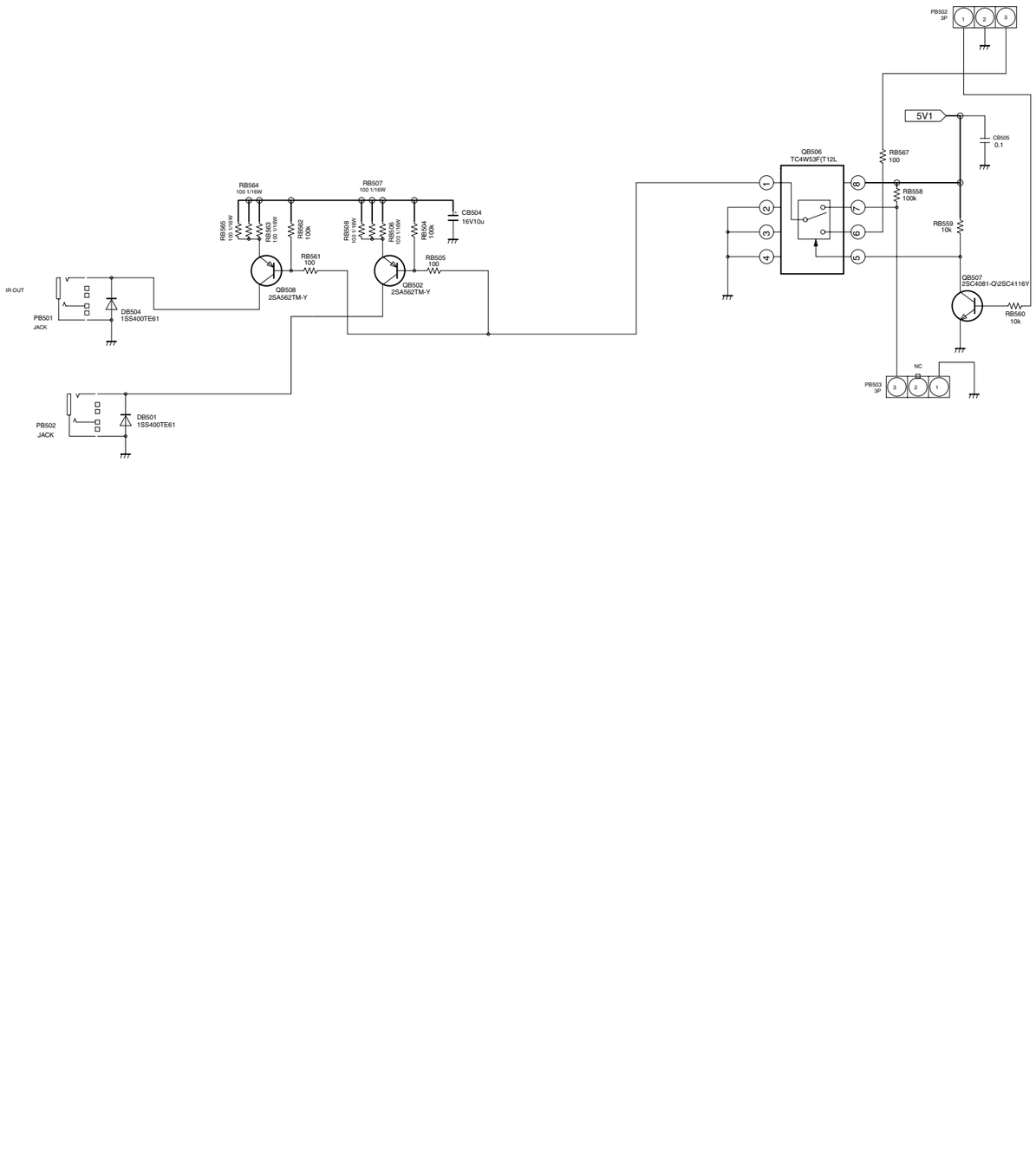
LIVE AREA

Magnifying

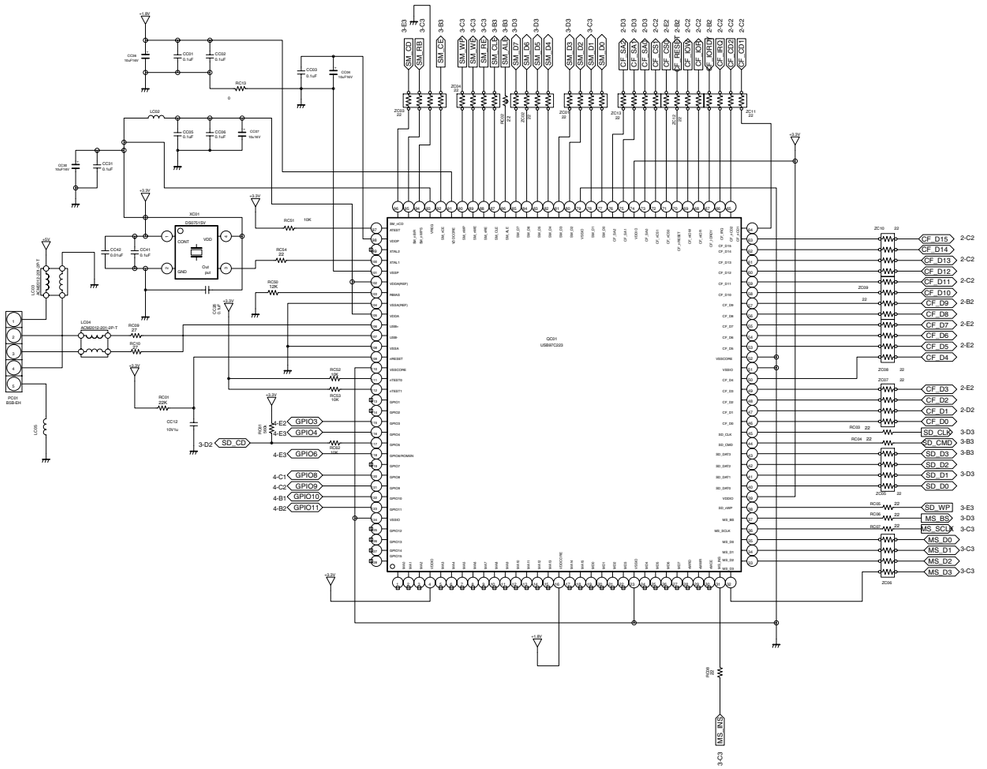
51H94/57H94
DEF POWER (POWER)
SHEET-3/3



51H94/57H94
FAN CONTROL

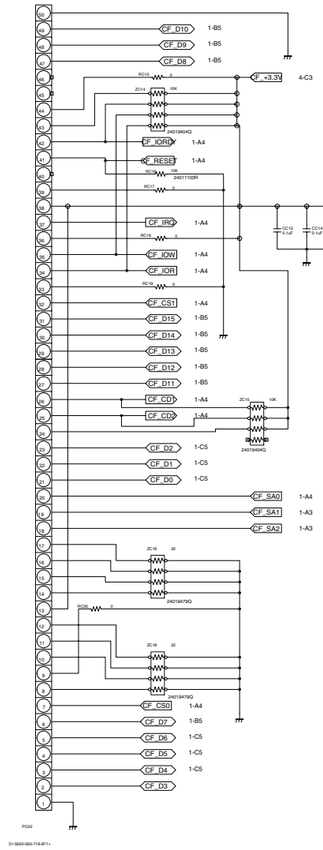


51H94/57H94
IR BLA OUT



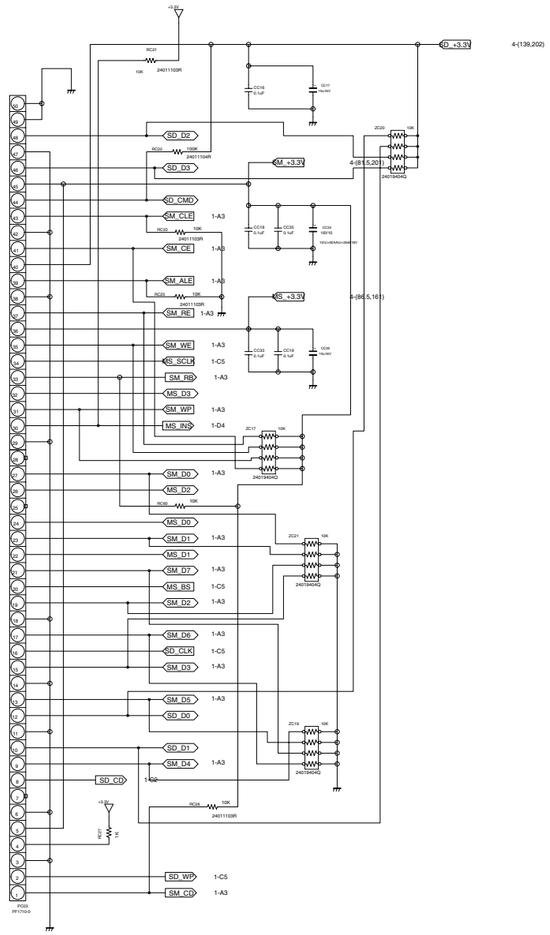
51H94/57H94
MULTI CARD (1/4)
SHEET-1/4

31-5620-050-719-871+

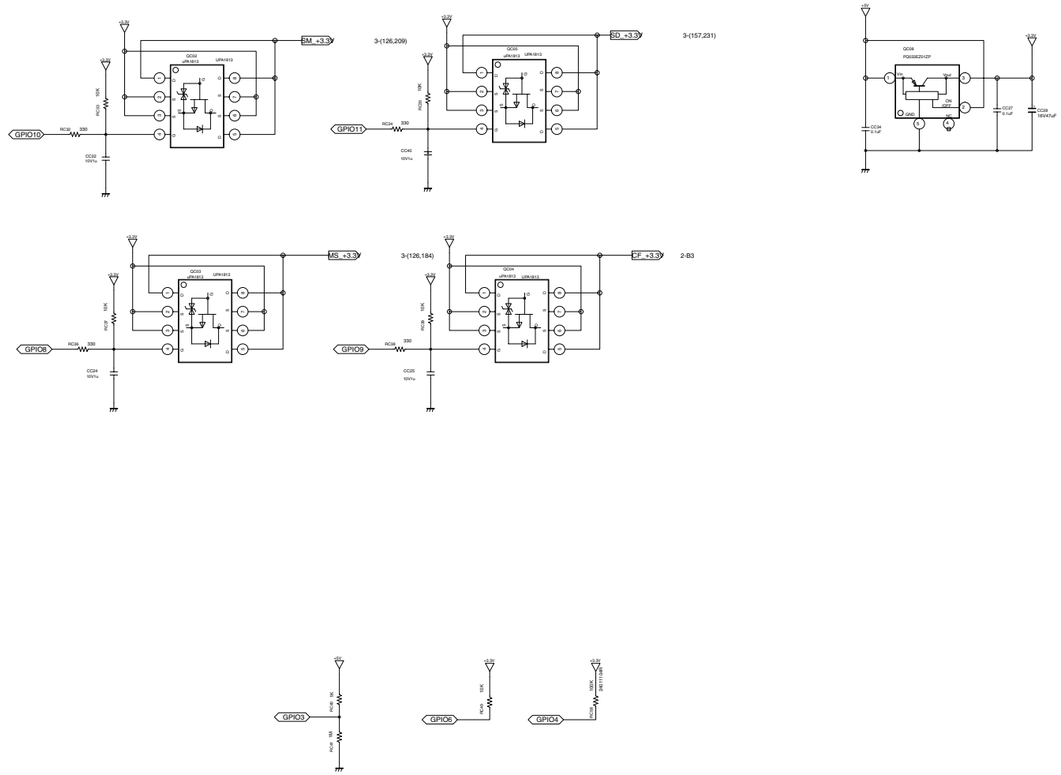


51H94/57H94
MULTI CARD (2/4)
SHEET-2/4

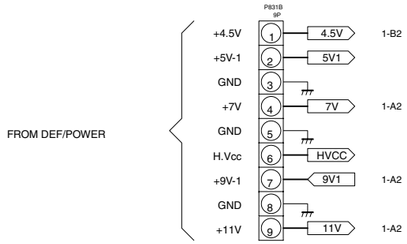
PF1710-0

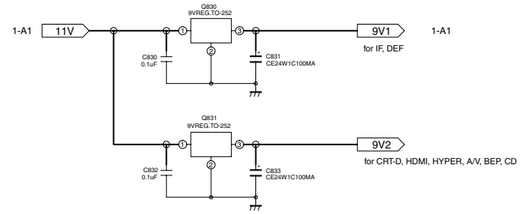


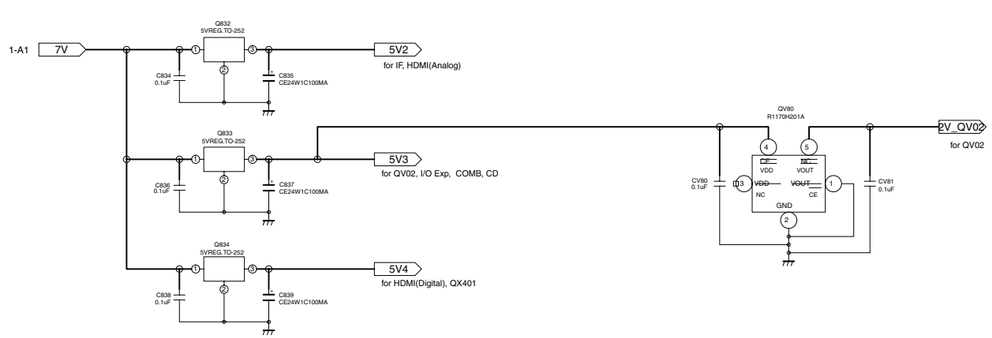
51H94/57H94
MULTI CARD (3/4)
SHEET-3/4

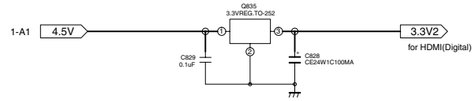


51H94/57H94
MULTI CARD (4/4)
SHEET-4/4

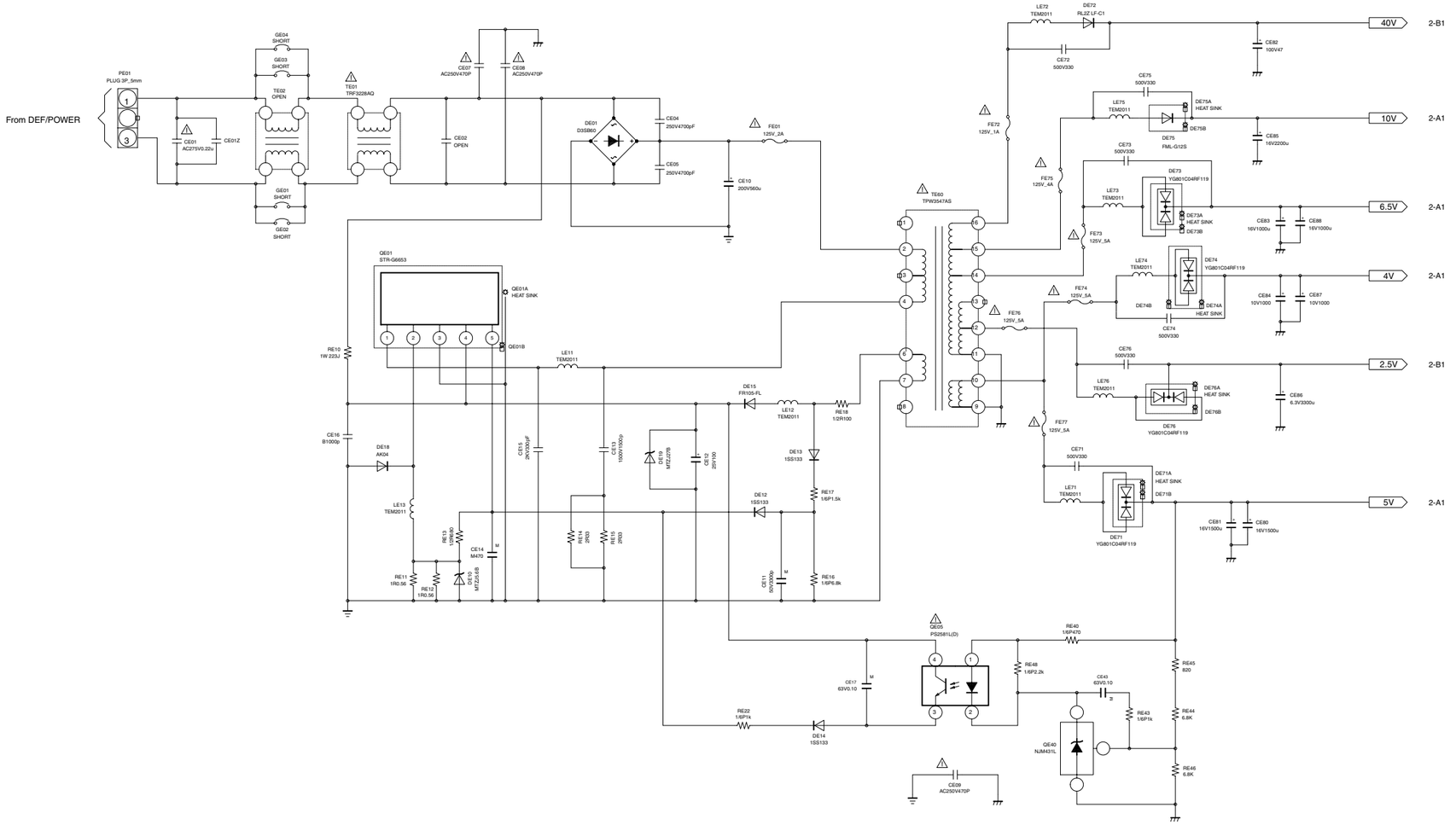


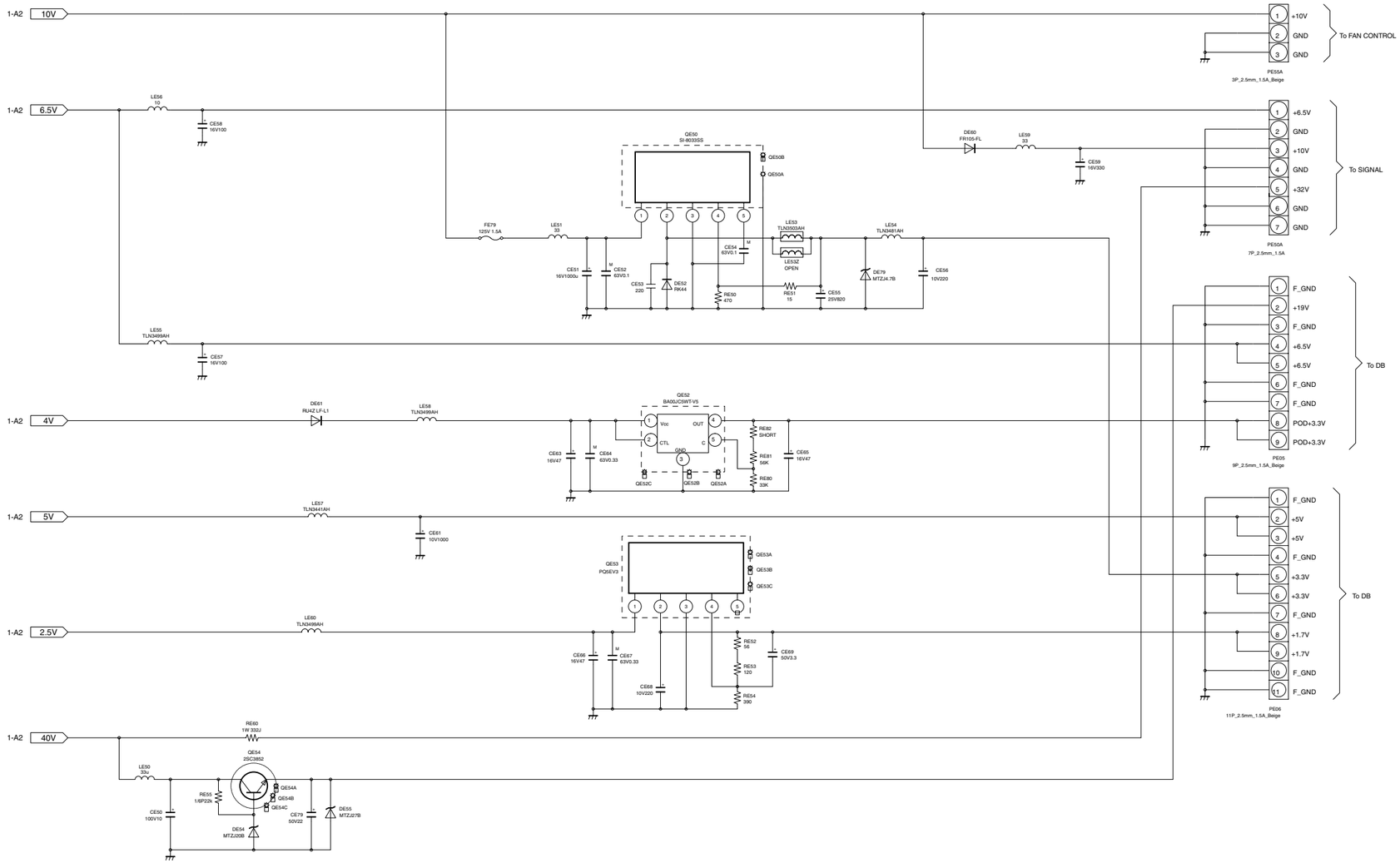




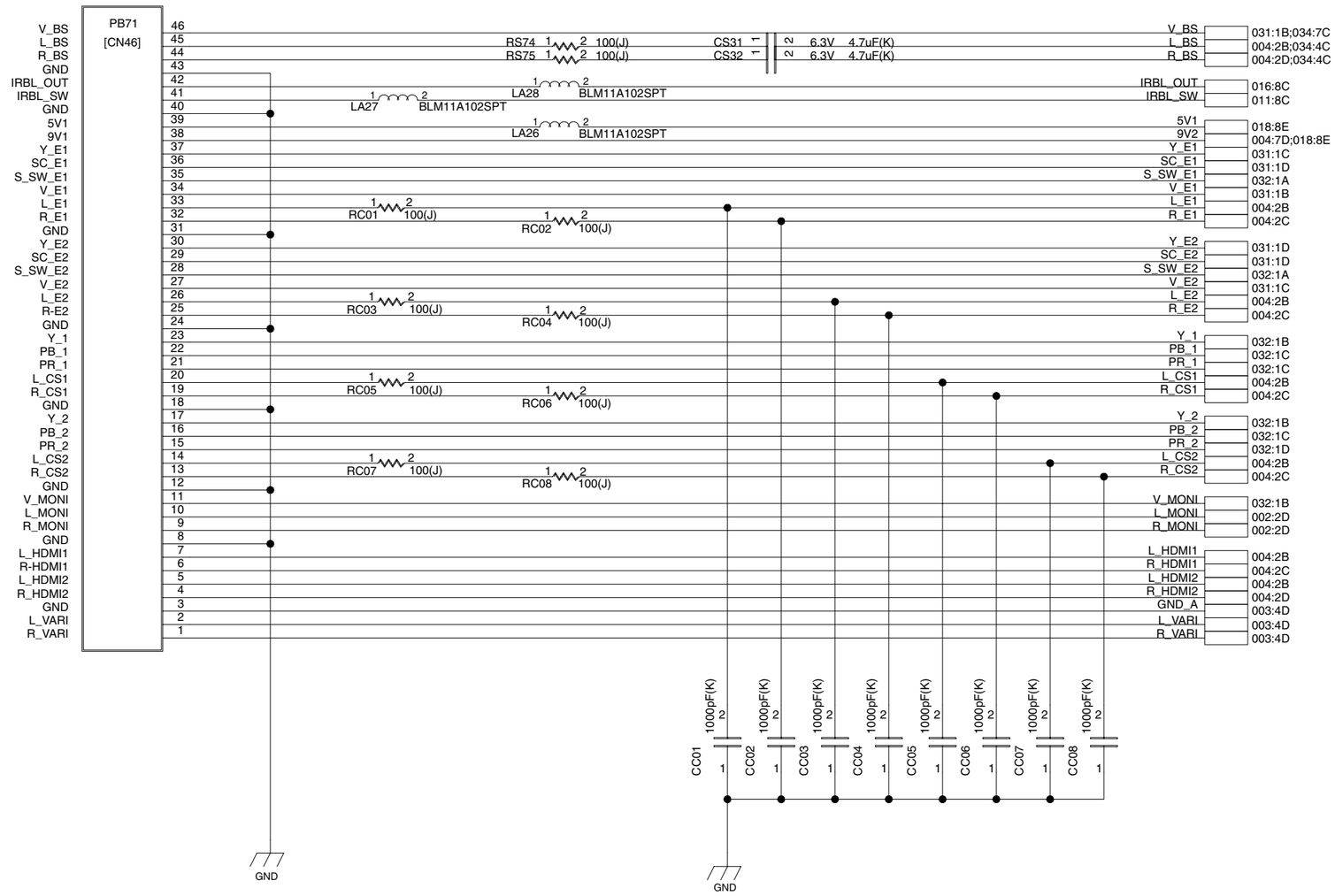


51H94/57H94
REGULATOR (HYPER SIGNAL)


From DEF/POWER
PE01
PLUG 3P_5mm
GE04
SHORT
GE03
SHORT
TE02
OPEN
GE01
SHORT
GE02
SHORT
CE01
AC275V0.22u
CE01Z
TE01
TRF3228AQ
CE07
AC250V470P
CE08
AC250V470P
CE02
OPEN
DE01
D3SB60
CE04
250V4700pF
CE05
250V4700pF
FE01
125V_2A
CE10
200V560u
QE01
STR-G6653
QE01A
HEAT SINK
QE01B
RE10
1W 223J
LE11
TEM2011
DE15
FR105-FL
LE12
TEM2011
RE18
1/2R100
CE16
B1000p
DE18
AK04
CE15
2KV330pF
CE13
1500V1000p
DE19
MTZJ27B
CE12
2KV100
DE13
1SS133
RE17
1/6P1.5k
LE13
TEM2011
DE12
1SS133
RE13
1/6P680
CE14
M470
M
RE14
2P2R
RE15
2P2
RE11
1R0.56
RE12
1R0.56
DE10
MTZJ5.6B
CE11
5KV3000p
M
RE16
1/6P6.8k
TE60
TPW3547AS
FE72
125V_1A
LE72
TEM2011
DE72
RLZ-LF-C1
CE72
500V330
40V
2-B1
CE82
100V47
CE75
500V330
LE75
TEM2011
DE75A
HEAT SINK
DE75B
DE75
FML-G12S
10V
2-A1
CE85
16V2200u
FE75
125V_4A
CE73
500V330
DE73
YG801C04RF119
LE73
TEM2011
DE73A
HEAT SINK
DE73B
6.5V
2-A1
CE83
16V1000u
CE88
16V1000u
FE73
125V_5A
LE74
TEM2011
DE74
YG801C04RF119
DE74B
DE74A
HEAT SINK
4V
2-A1
CE84
10V1000
CE87
10V1000
FE74
125V_5A
CE74
500V330
FE76
125V_5A
CE76
500V330
LE76
TEM2011
DE76A
HEAT SINK
DE76B
DE76
YG801C04RF119
2.5V
2-B1
CE86
6.3V3300u
FE77
125V_5A
CE71
500V330
DE71A
HEAT SINK
DE71B
LE71
TEM2011
DE71
YG801C04RF119
5V
2-A1
CE81
16V1500u
CE80
16V1500u
QE05
PS2581L(D)
RE40
1/6P470
RE48
1/6P2.2k
CE43
63V0.1u
RE43
1/6P1k
RE45
820
RE44
6.8K
QE40
NJM431L
RE46
6.8K
CE17
63V0.1u
M
RE22
1/6P1k
DE14
1SS133
CE09
AC250V470P
51H94/57H94
SUB POWER (1/2)
SHEET-1/2

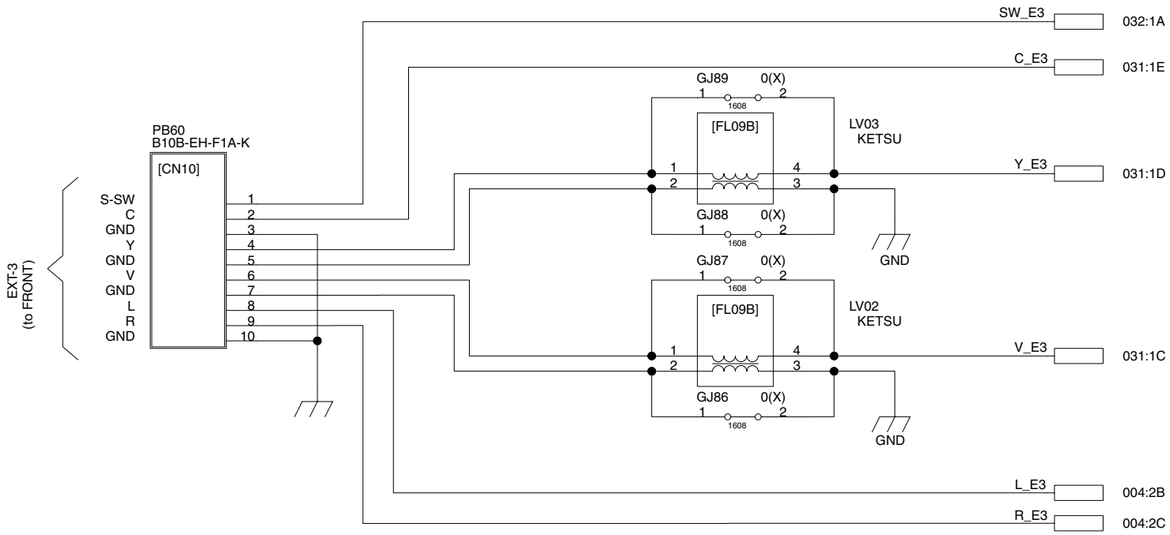


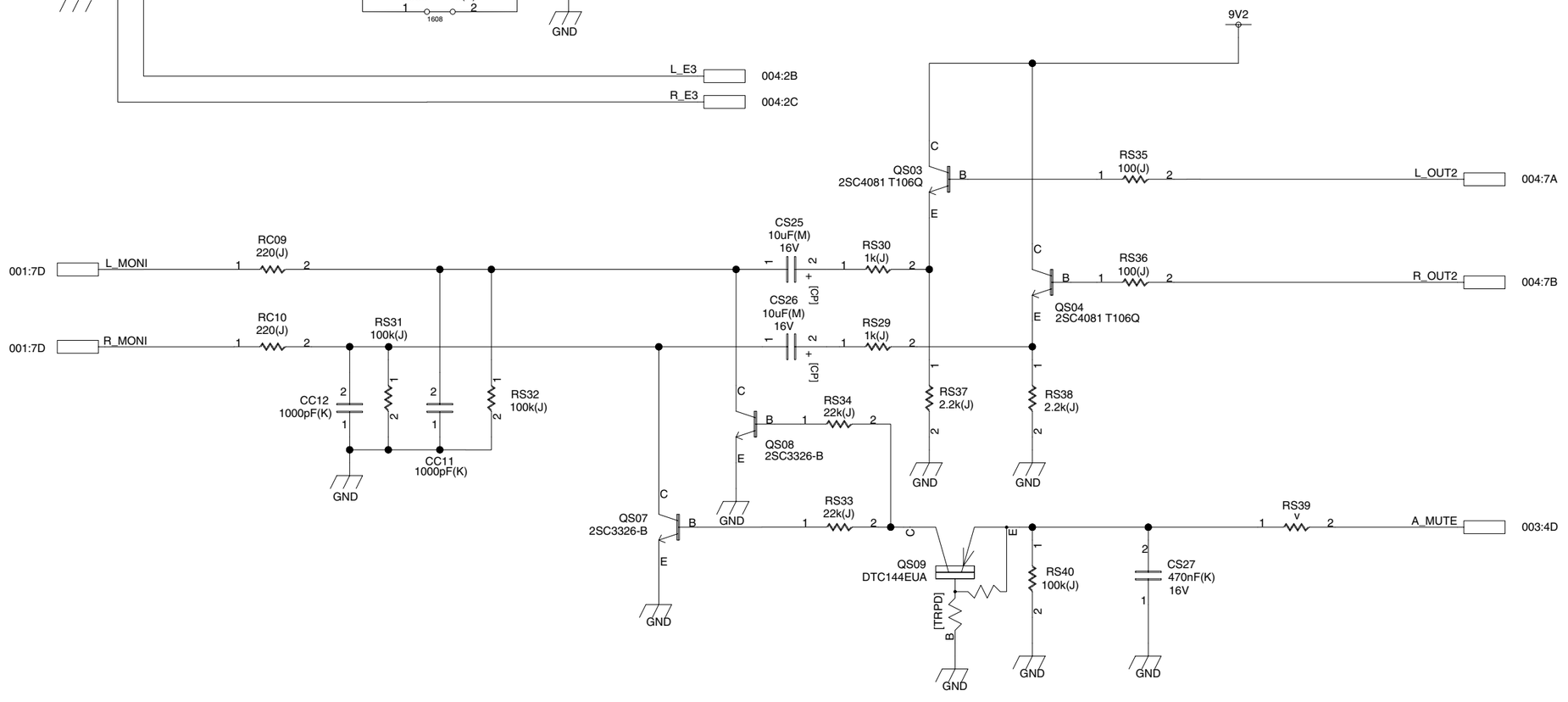
51H94/57H94
SUB POWER (2/2)
SHEET-2/2



51H94/57H94
HYPER SIGNAL (BACK AV SOCKET)
SHEET-1/34

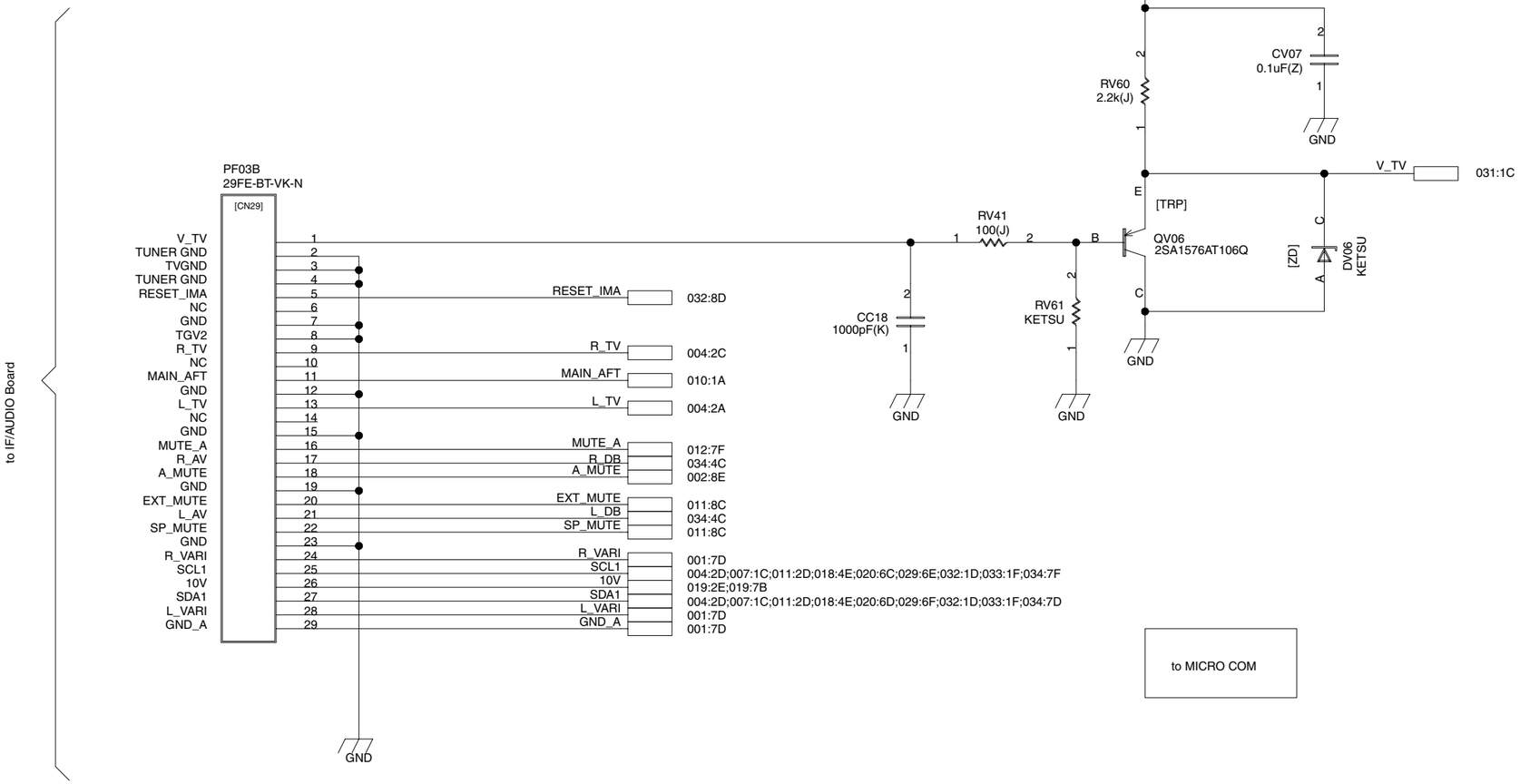
SH.NO.
1





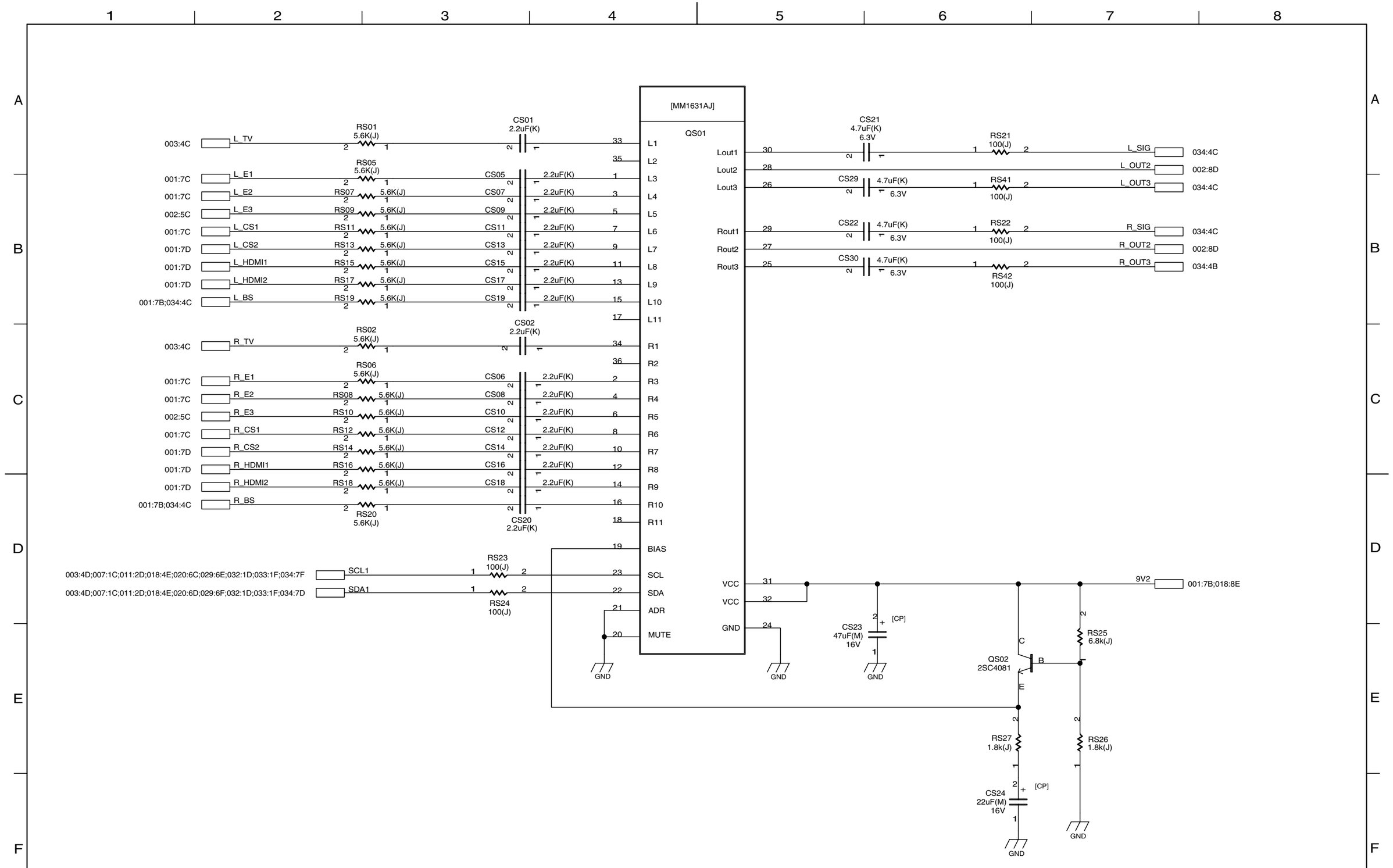
51H94/57H94
HYPER SIGNAL (AV1)
SHEET-2/34

SH.NO.
2

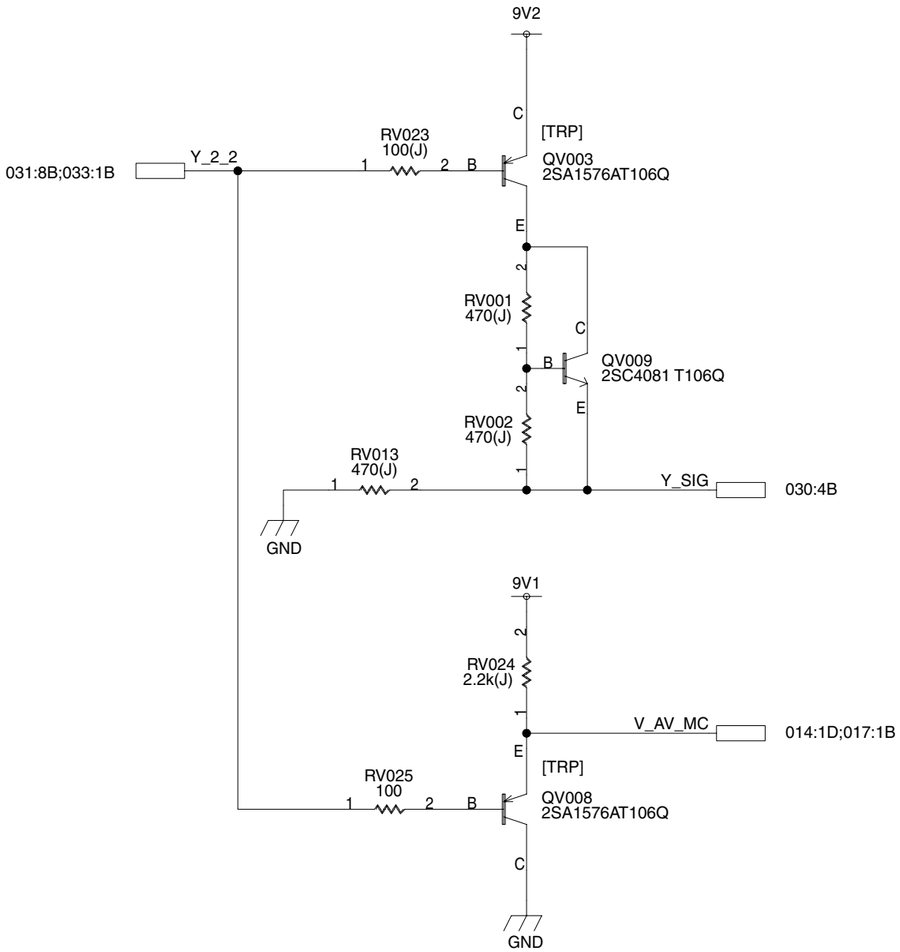


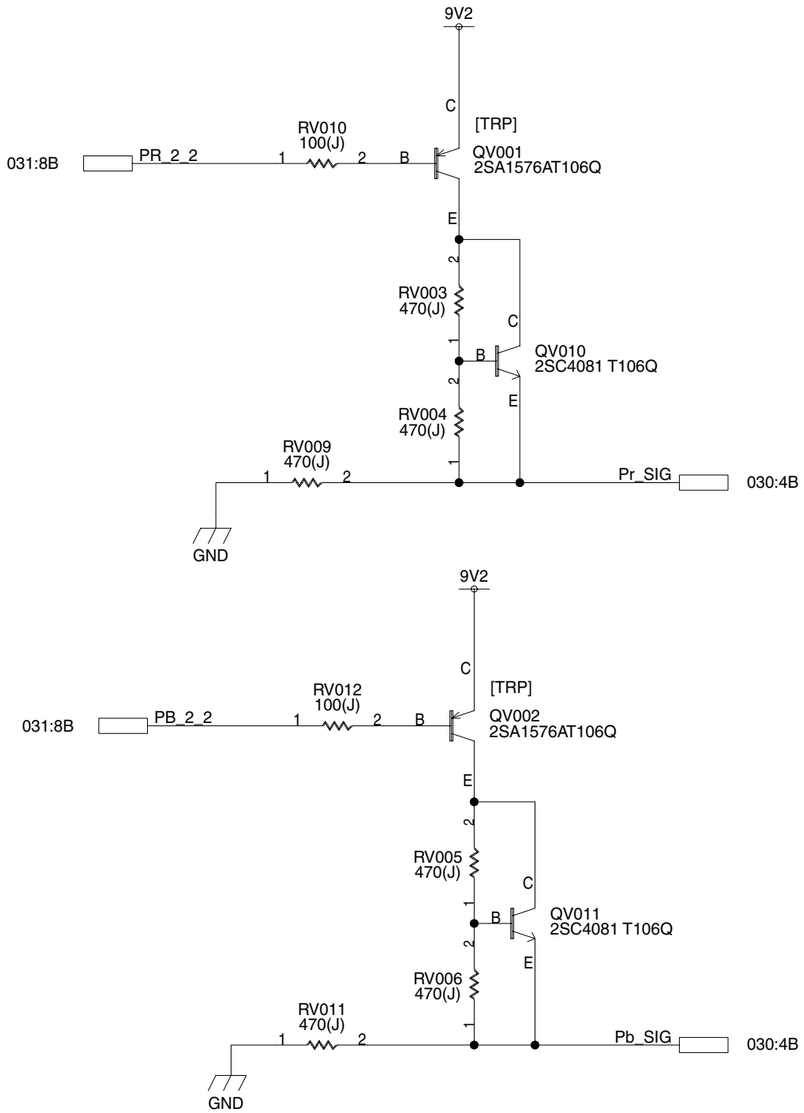
51H94/57H94
HYPER SIGNAL (AV2)
SHEET-3/34

SH.NO.
3



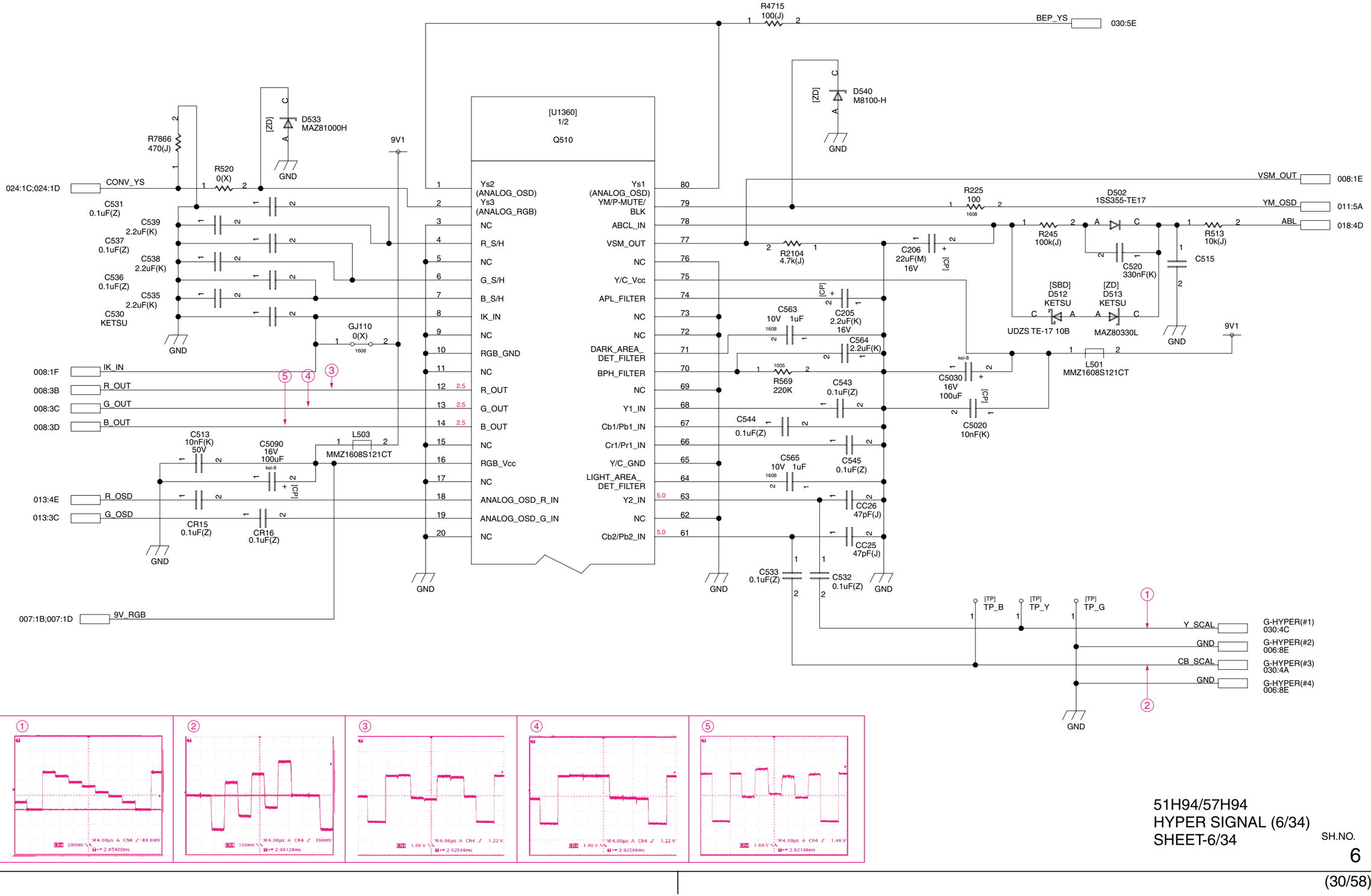
51H94/57H94
HYPER SIGNAL (AUDIO SWITCH) SH.NO.
SHEET-4/34 4





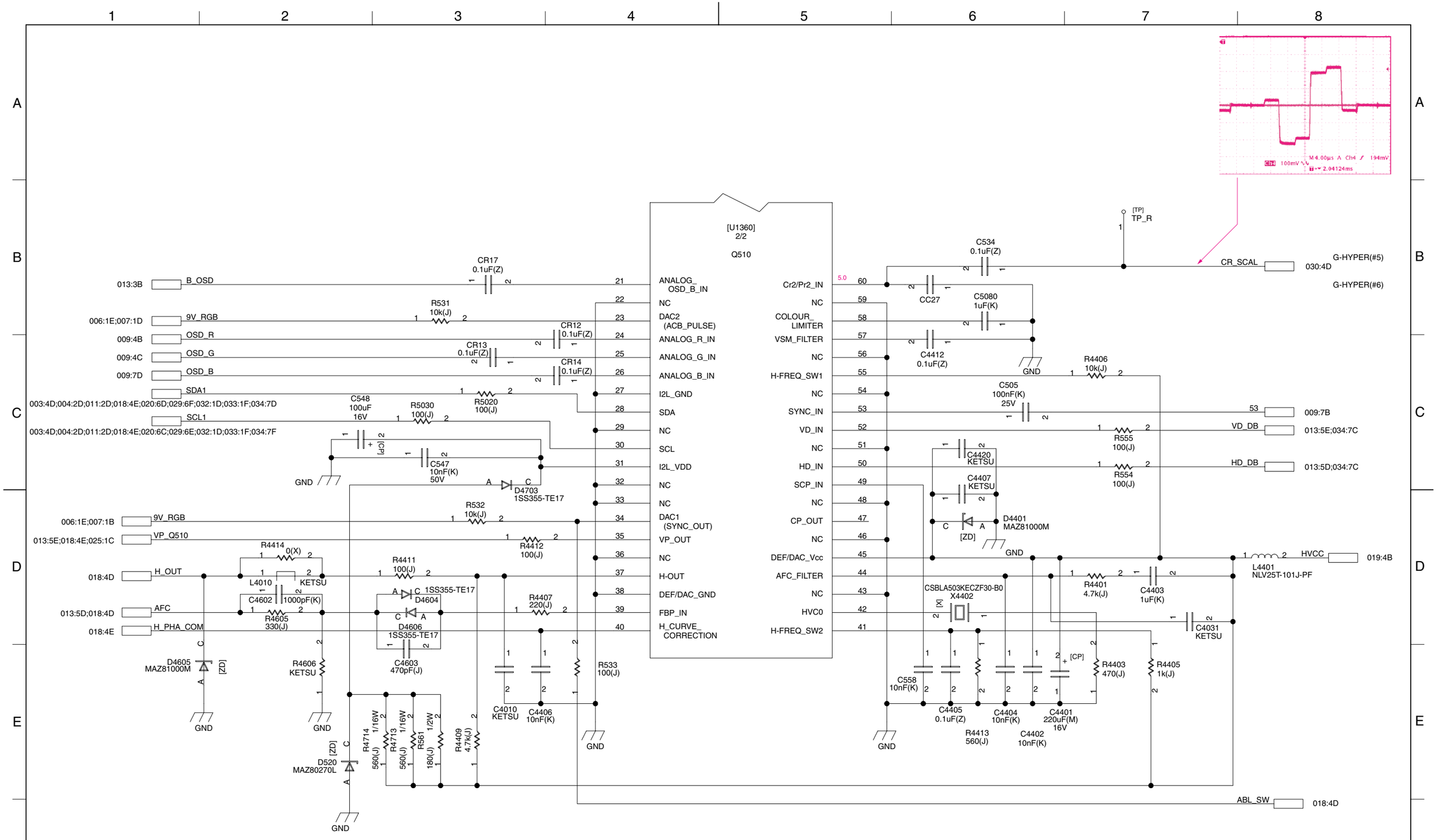
51H94/57H94
HYPER SIGNAL (AV3)
SHEET-5/34

SH.NO.
5



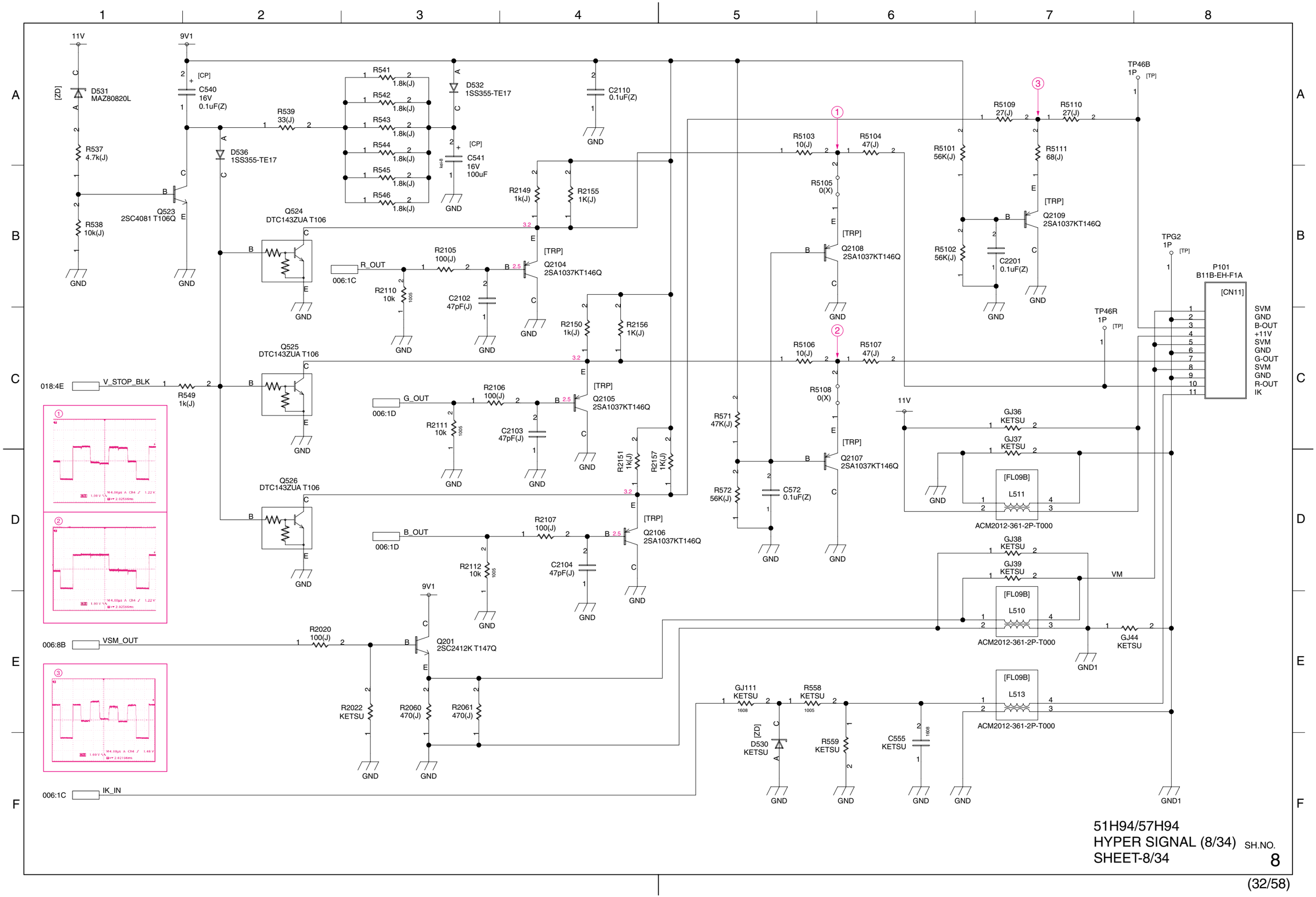
51H94/57H94
HYPER SIGNAL (6/34)
SHEET-6/34

SH.NO.
6

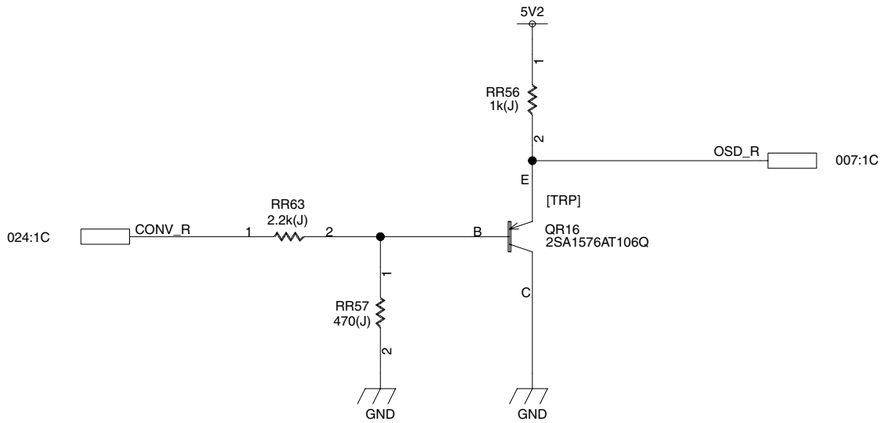


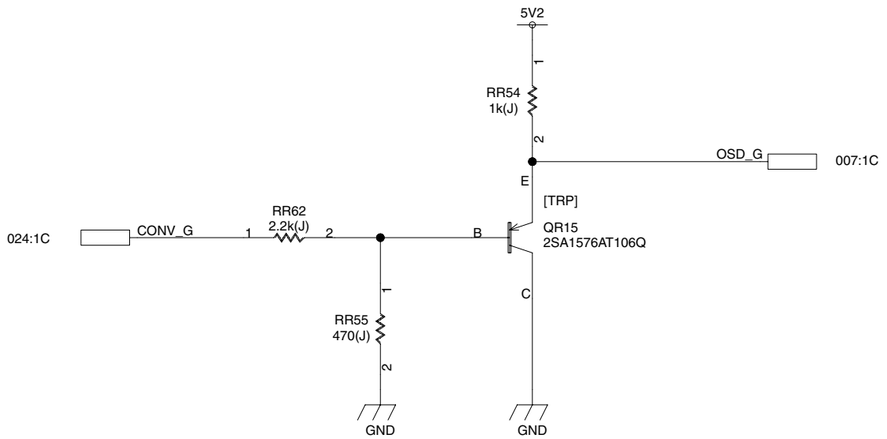
51H94/57H94
HYPER SIGNAL (7/34)
SHEET-7/34

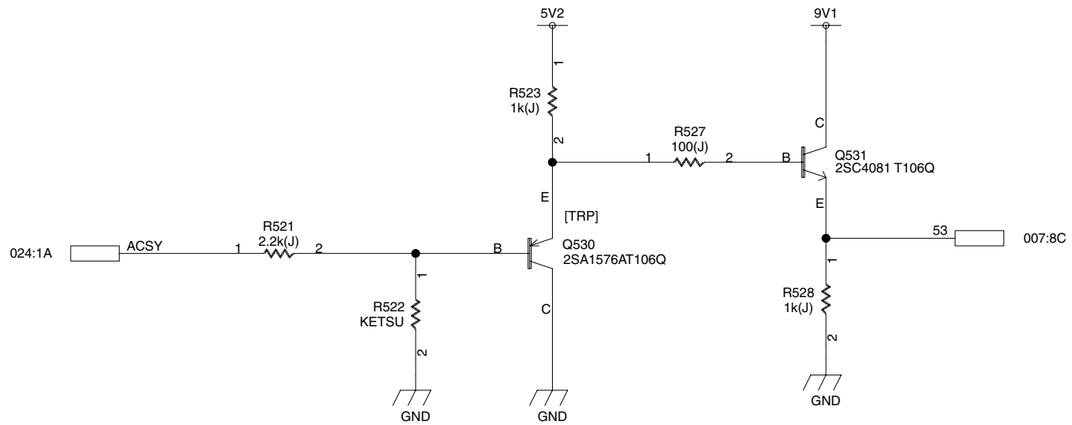
SH.NO.
7

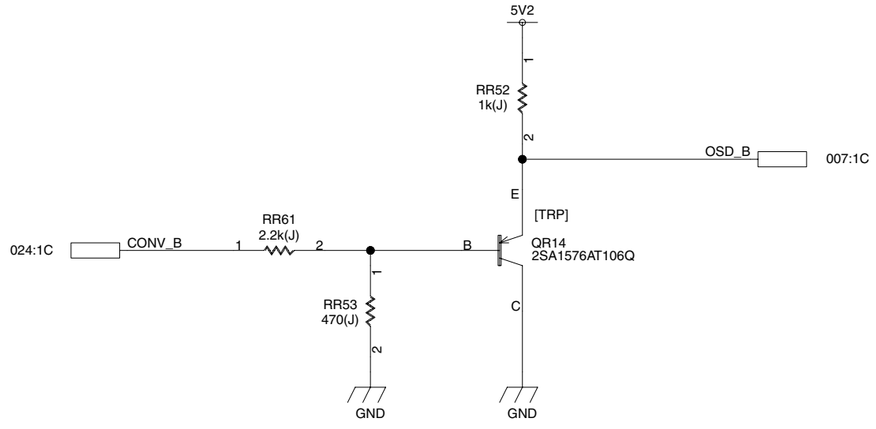


51H94/57H94
HYPER SIGNAL (8/34) SH.NO.
SHEET-8/34 8



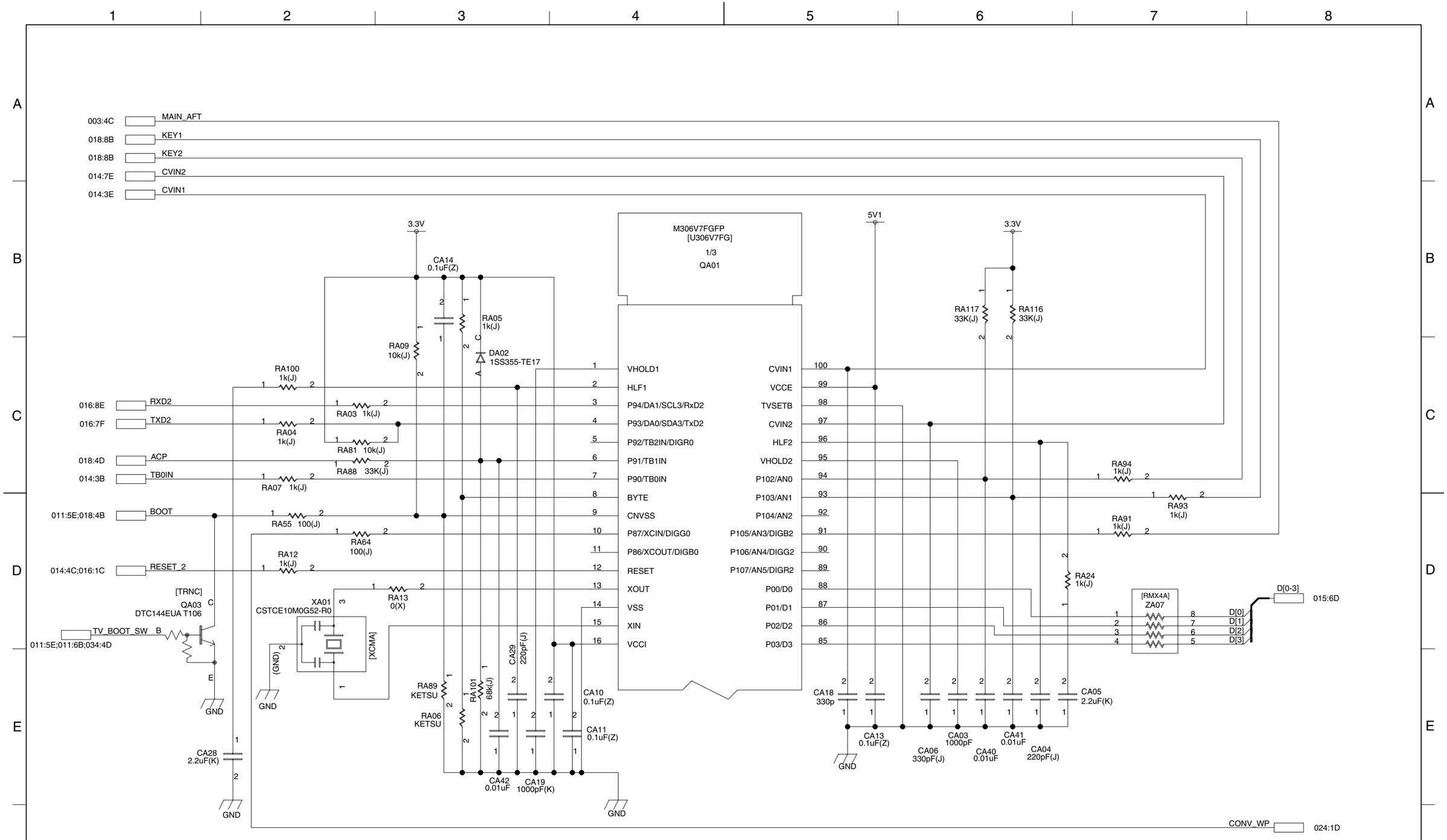






51H94/57H94
HYPER SIGNAL (9/34)
SHEET-9/34

SH.NO.
9



51H94/57H94
HYPER SIGNAL (MICON1)
SHEET-10/34

SH.NO.
10

NOT MOUNT

LB02
TRF1197D

M306V7FGFP
[U306V7FG]
2/3

QA01

YM_OSD 006:8B
YS_OSD 030:8E

HDMI_VD 034:4E
MAIN_SYNC_DET 017:7B
MAIN_SYNC 017:8D
CONV_RST 025:3C;025:3D;029:3A
SUB_SYNC 017:6D
SCL0 018:3C
SCL1
SDA1 003:4D;004:2D;007:1C;018:4E;020:6C;029:6E;032:1D;033:1F;034:7F
SDA0 003:4D;004:2D;007:1C;018:4E;020:6D;029:6F;032:1D;033:1F;034:7D 018:3C

RA019 100(J)
RA20 1k(J)
RA113 100(J)
RA115 1k(J)
RA121 1k(J)
RA19 10k(J)
RA96 1k(J)
RA509 100(J)
RA26 100(J)
RA02 100(J)
RA29 100(J)
RA30 100(J)
RA01 100(J)
RA08 1k(J)
RA32 470(J)

OSC1/OSCHLF 17
OSC2 18
P83/INT1 19
P82/INT0 20
OUT1 21
OUT2 22
P77/HC1 23
P76/TA3OUT 24
P75/HC0 25
P74/TA2OUT 26
P73/CTS2,RTS2 27
P72/SCL2/CLK2 28
P71/SCL1/RxD2 29
P70/SDA1/TxD2 30
P67/SDA2 31
R/DIGR1 32

P04/D4 84
P05/D5 83
P06/D6 82
P07/D7 81
P10/D8 80
P11/D9 79
P12/D10 78
P13/D11 77
P14/D12 76
P15/D13 75
P16/D14 74
P17/D15 73
P20/A0 72
P21/A1 71
P22/A2 70
P23/A3 69

CA08 0.015uF
RA10 27K(J)
CA09 2pF

RA71 68K(J)
CA301 1uF 10V
CA302 1uF 10V

3.3V
RA303 10k
010:1D;011:5E;034:4D TV_BOOT_SW

[TRNC] QA204 DTC144EUA T106
RA204 33K(J)
RA205 33K(J)
[TRP] QA205 2SA1576AT106Q

[RMX4A] ZA06
D[4-7] 015:6D
D[4] D[5] D[6] D[7]

[RMX4A] ZA05
A[0-3] 015:3B
A[0] A[1] A[2] A[3]
68(J)

RA80 27K
CONV_BUS_OFF 024:1F
RA79 1k(J)
EXT_MUTE 003:4D
RA75 1k(J)
IRBL_SW 001:7B
RA83 1k(J)
SP_MUTE 003:4D
RA302 100
FCTR 018:8D
RA301 1k(J)
FLOK 018:8D
RA102 1k(J)
HC_RST 034:4D
RA103 1k(J)
DB_ONOFF 034:4D

EEPROM
[MSEE8K8]
QA02
SDA SCL A0 A1 A2 WP [GND] [VCC]
AT24C64AN-10SI-2.7

RA95 3.3K(J)
RA90 3.3K(J)
RA42 100(J)
RA28 100(J)
CA15 10nF(K)

5V1

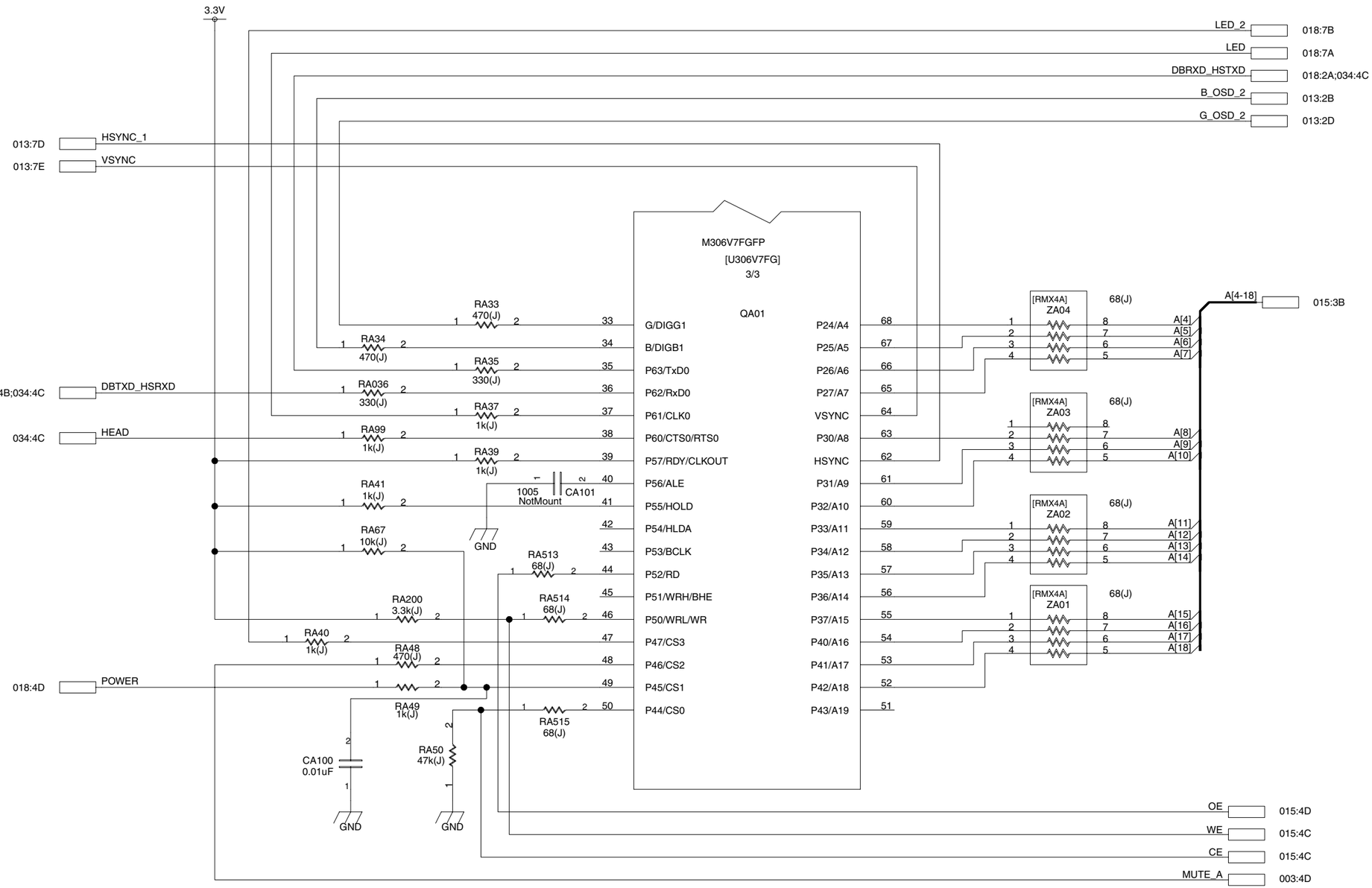
010:1D;018:4B BOOT
010:1D;011:6B;034:4D TV_BOOT_SW
RA202 100(J)
RA203 100(J)
TC7S86F(TE85R)
[7S86] QA201
[Vcc] [Vss]
CA201 0.1uF(Z)

RA201 10k(J)
[TRNC] QA203 DTC144EUA T106
[TRNC] QA202 DTC144EUA T106

R_OSD_2 013:2E
RMT_OUT_2 013:5B

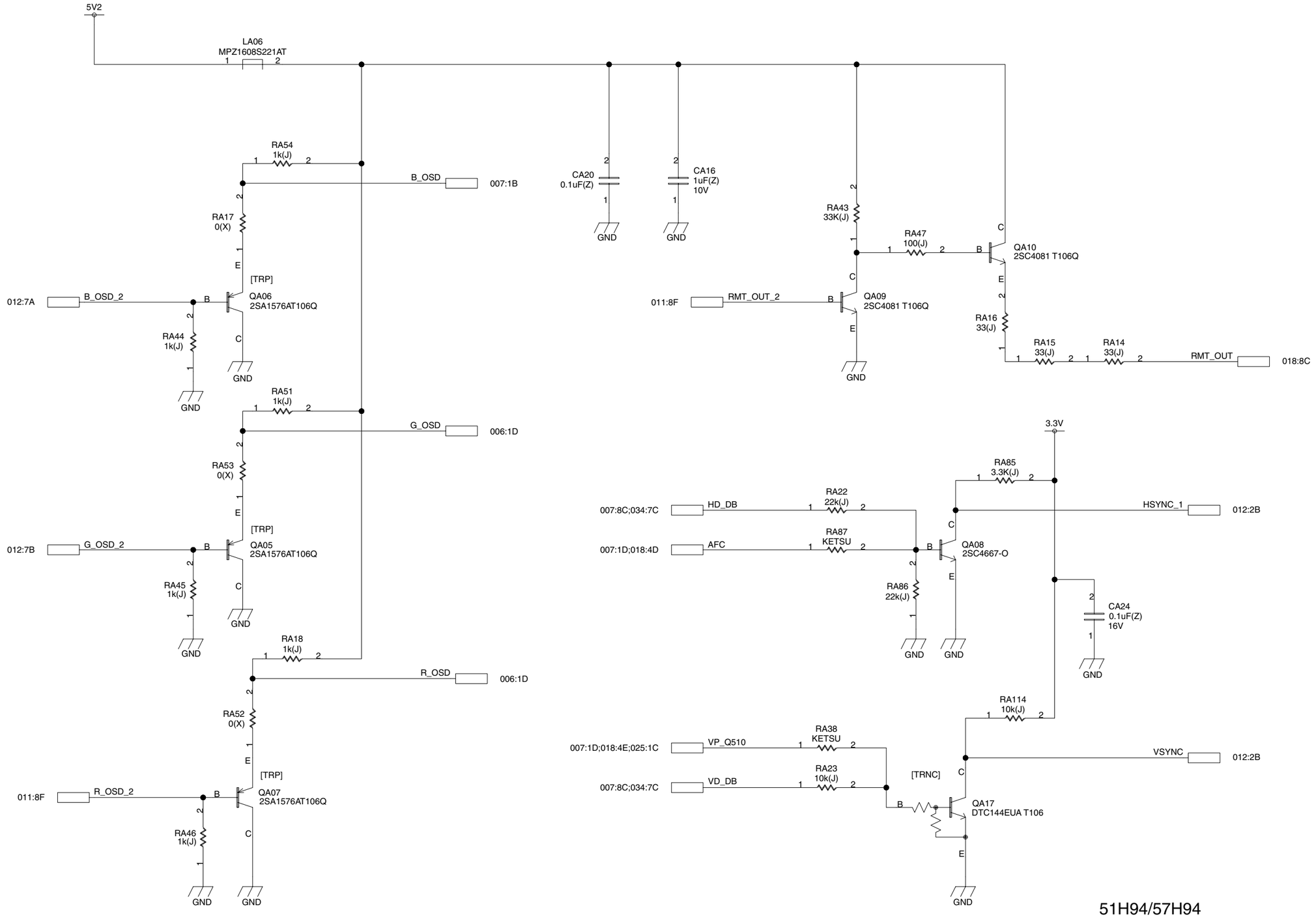
GND

51H94/57H94
HYPER SIGNAL (MICON2) SH.NO.
SHEET-11/34 11



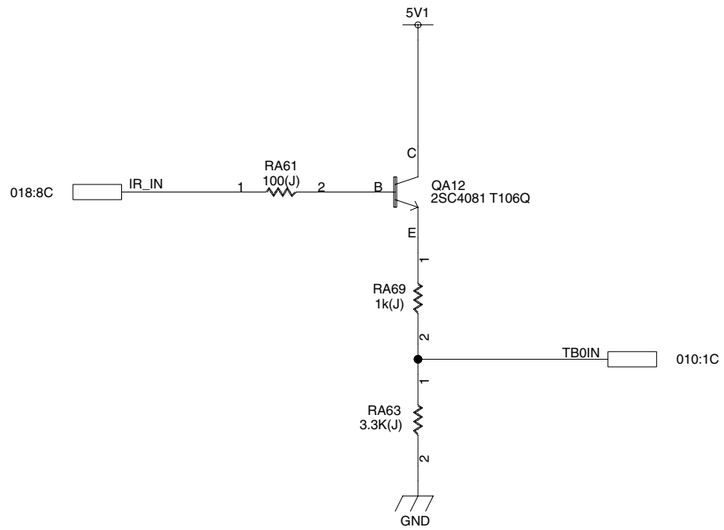
51H94/57H94
HYPER SIGNAL (MICON3)
SHEET-12/34

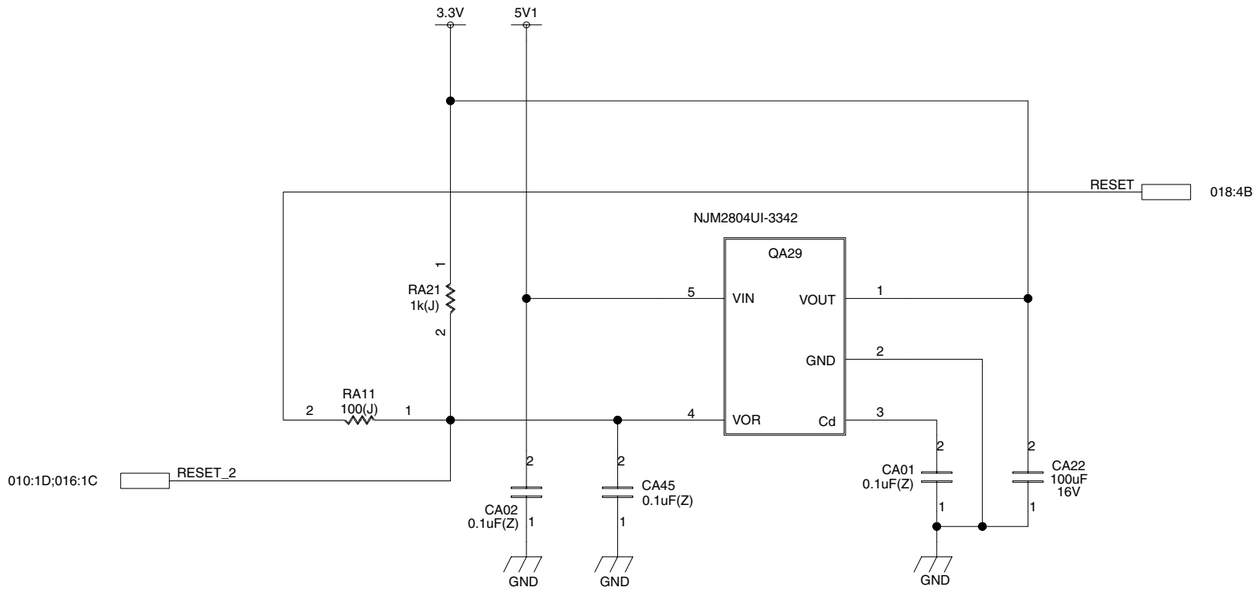
SH.NO.
12

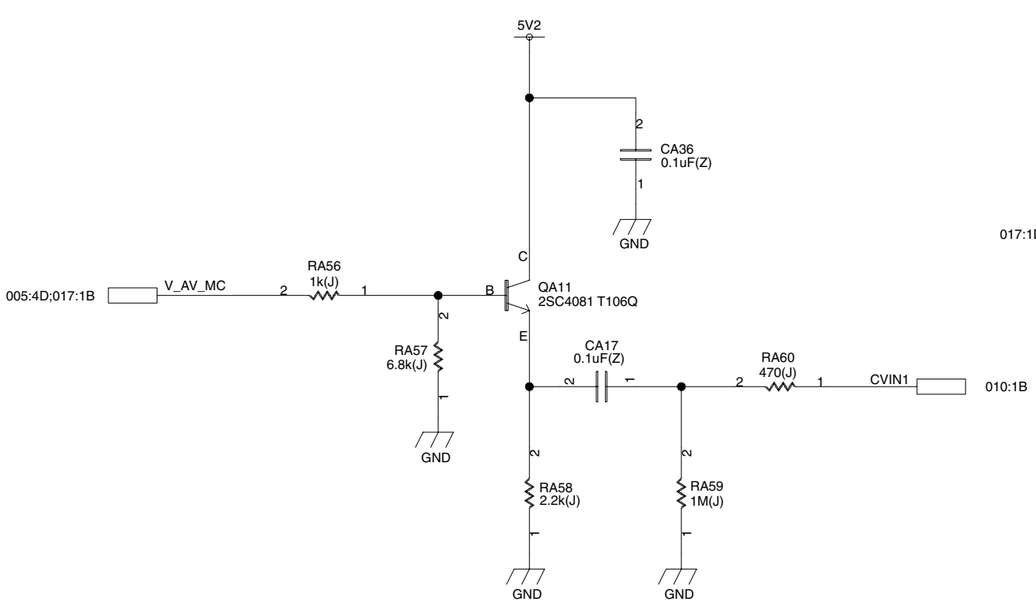


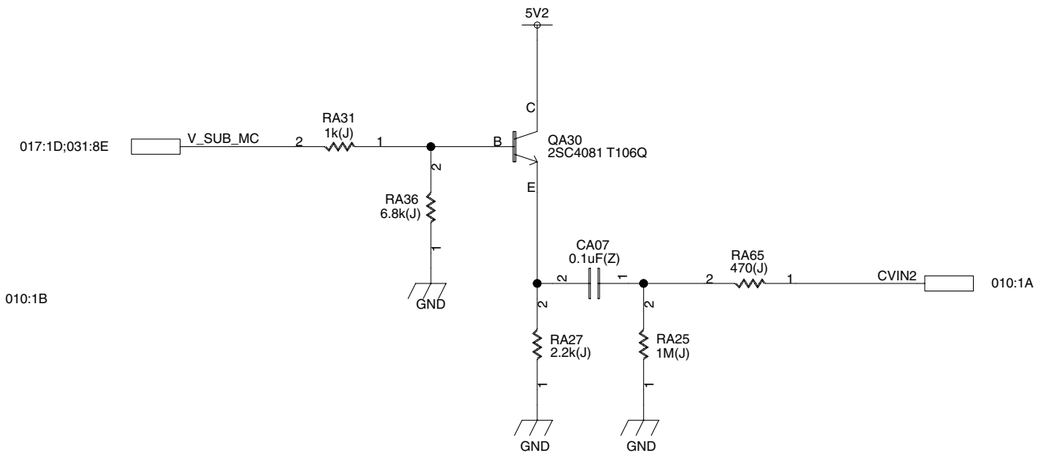
51H94/57H94
HYPER SIGNAL (MICON4)
SHEET-13/34

SH.NO.
13



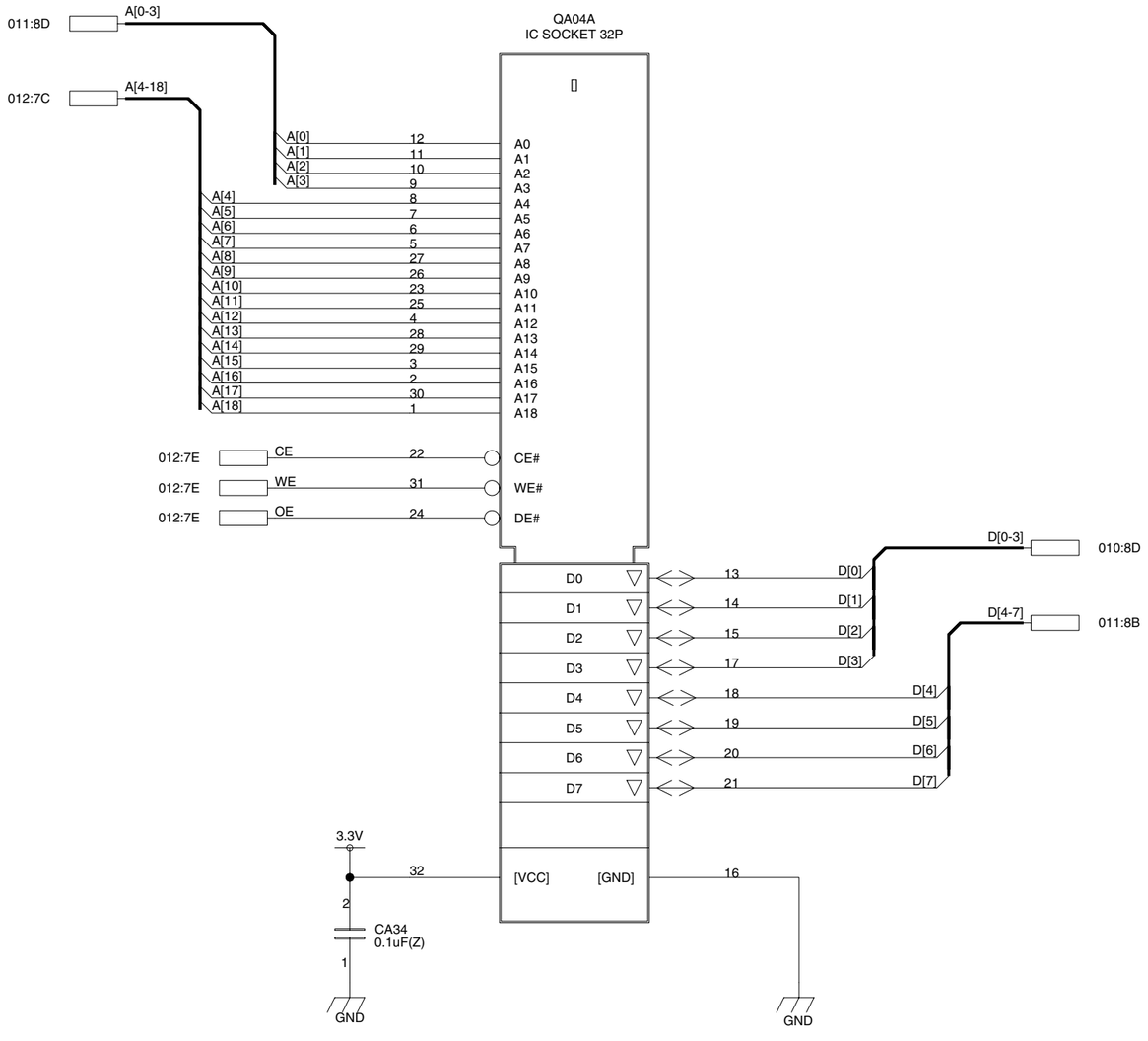






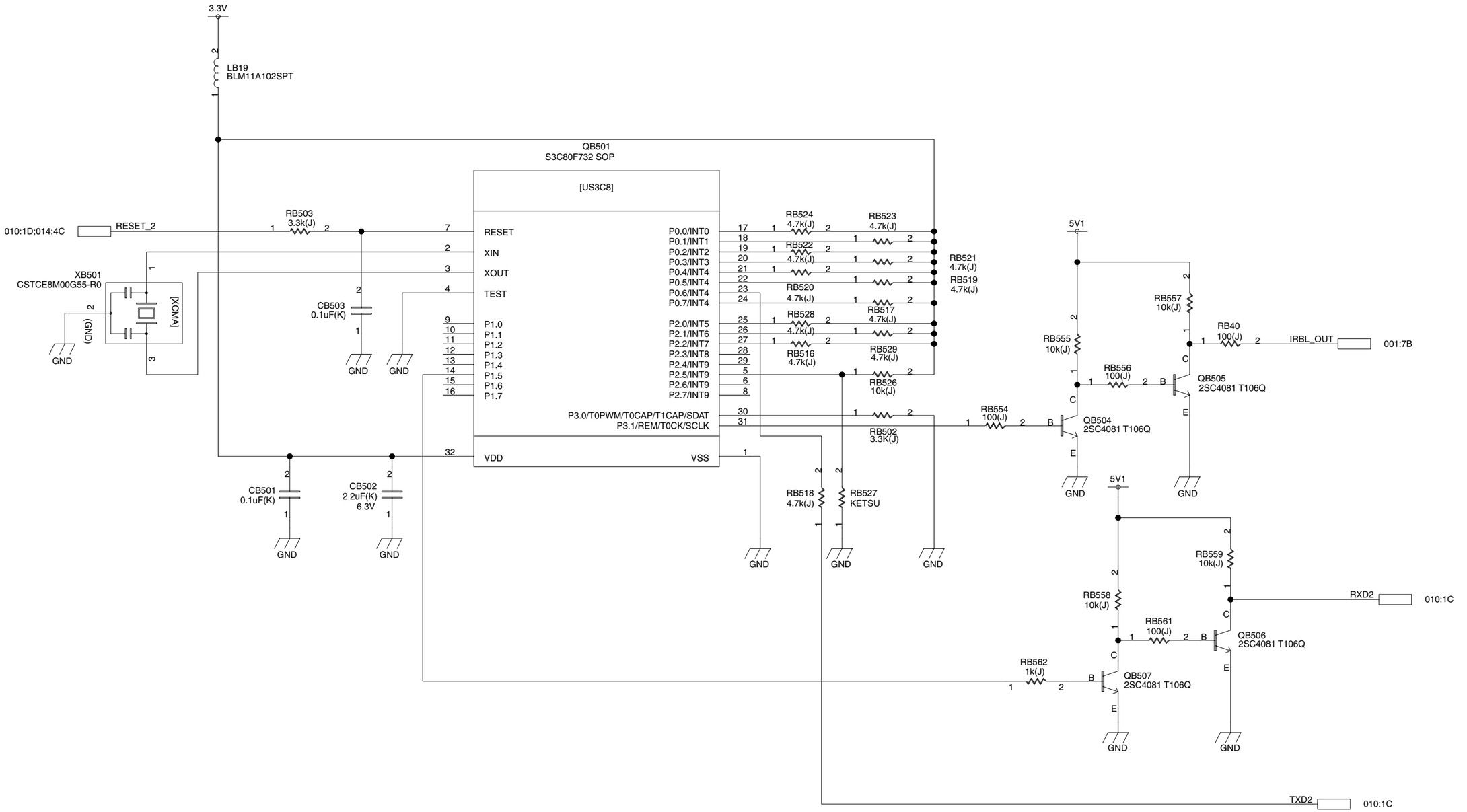
51H94/57H94
HYPER SIGNAL (MICON5)
SHEET-14/34

SH.NO.
14



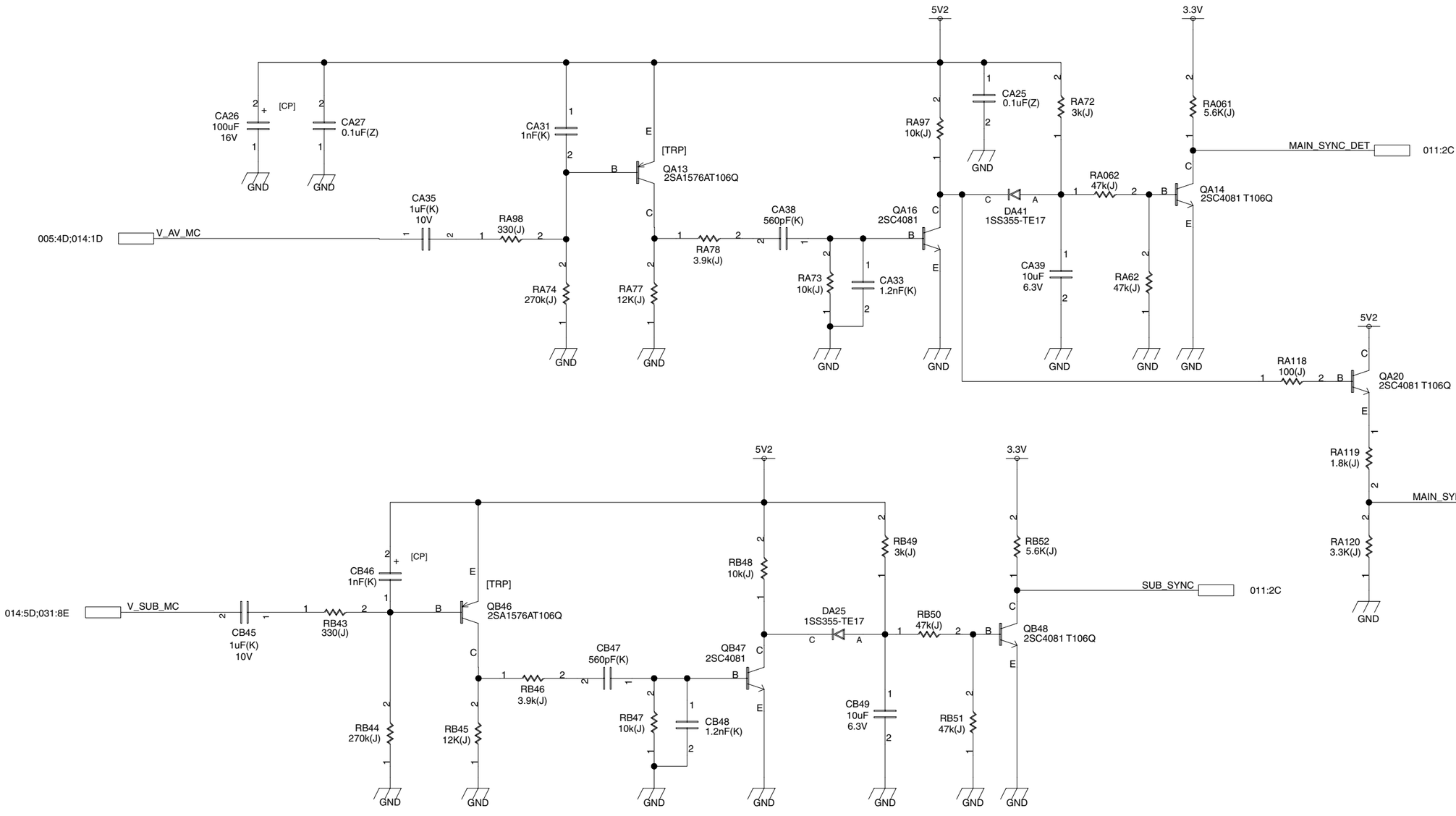
51H94/57H94
HYPER SIGNAL (MICON6)
SHEET-15/34

SH.NO.
15



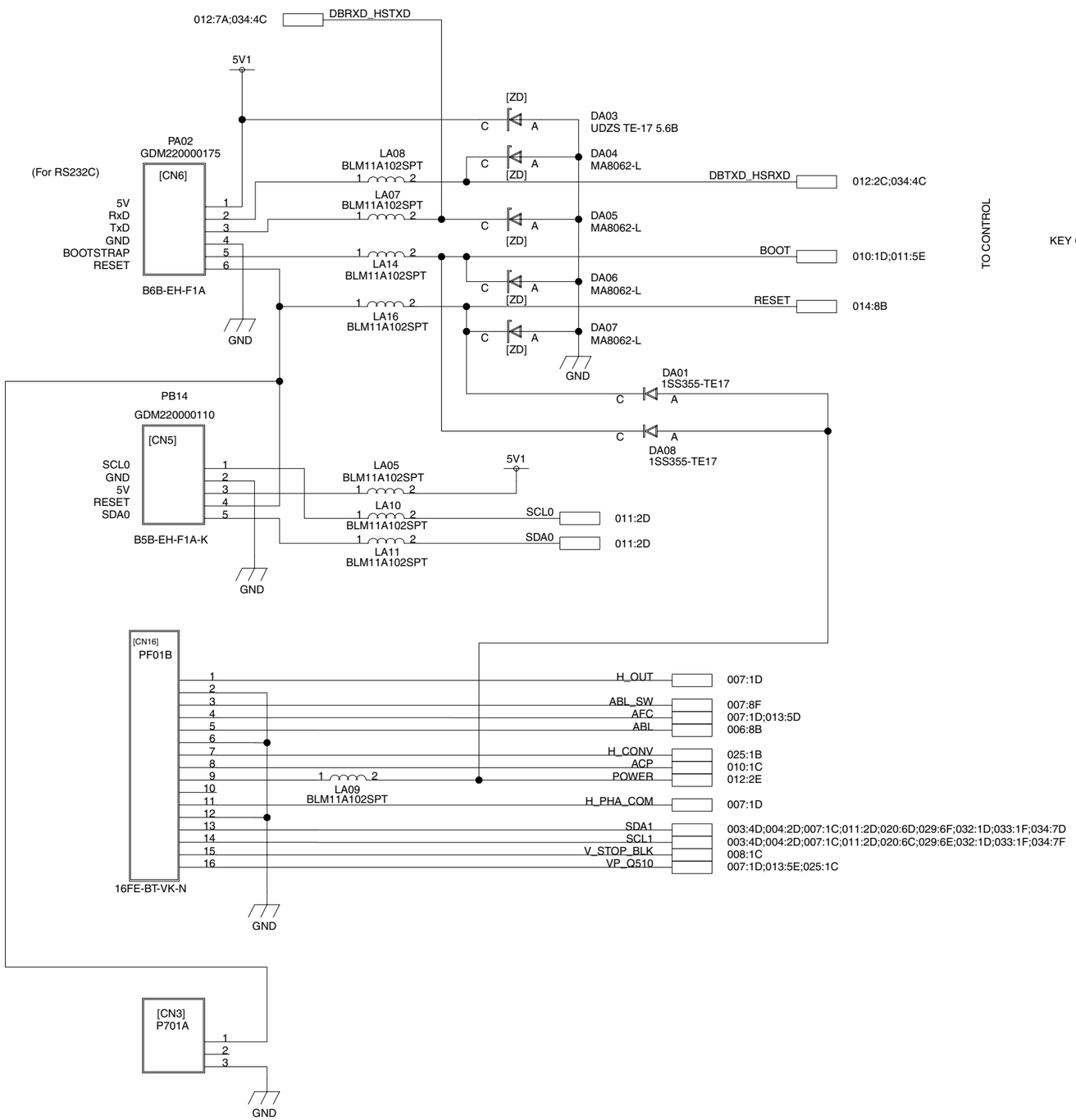
51H94/57H94
HYPER SIGNAL (MICON7)
SHEET-16/34

SH.NO.
16



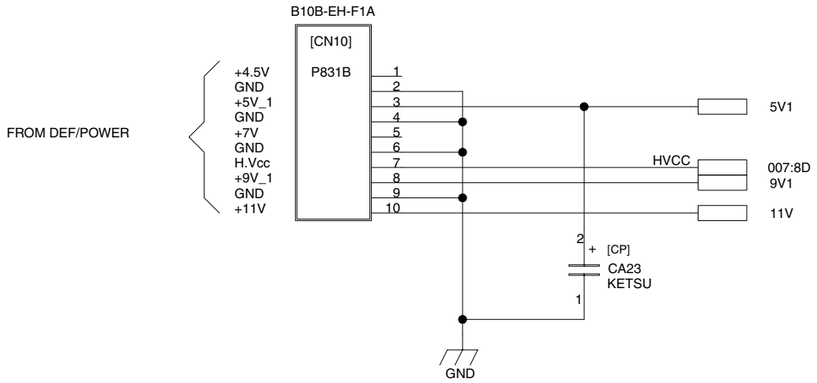
51H94/57H94
HYPER SIGNAL (MICON8)
SHEET-17/34

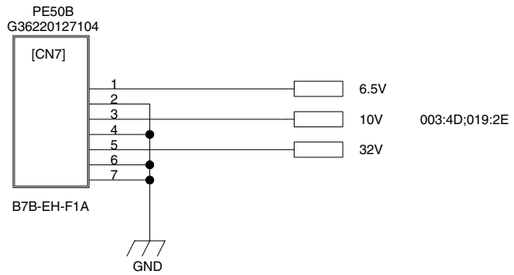
SH.NO.
17
(41/58)

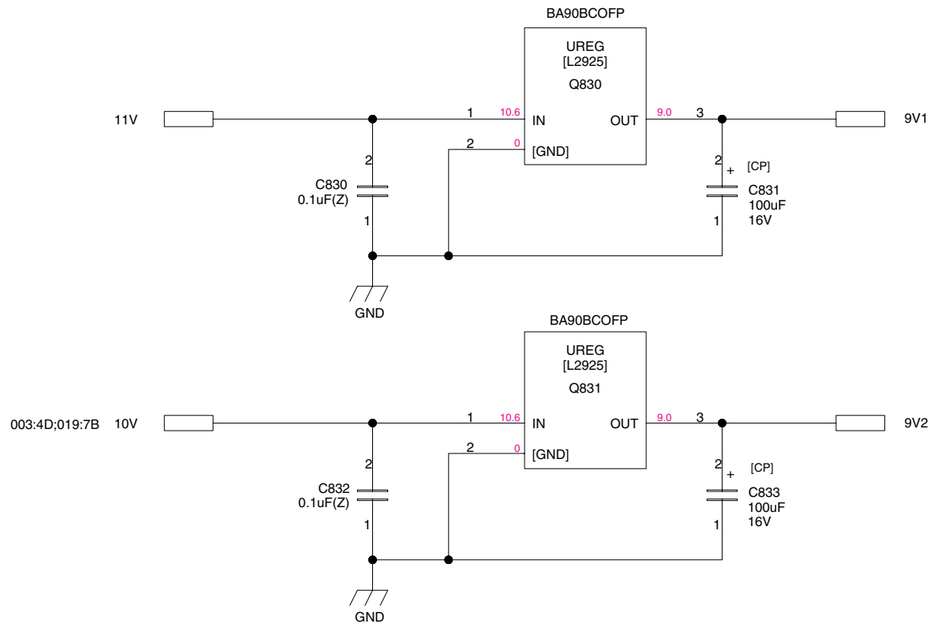


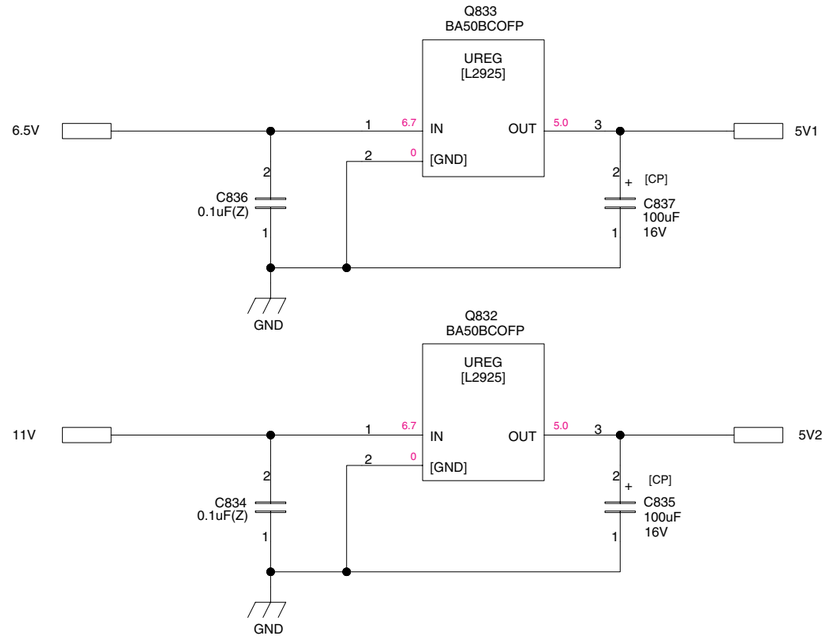
51H94/57H94
HYPER SIGNAL (MICON9)
SHEET-18/34

SH.NO.
18



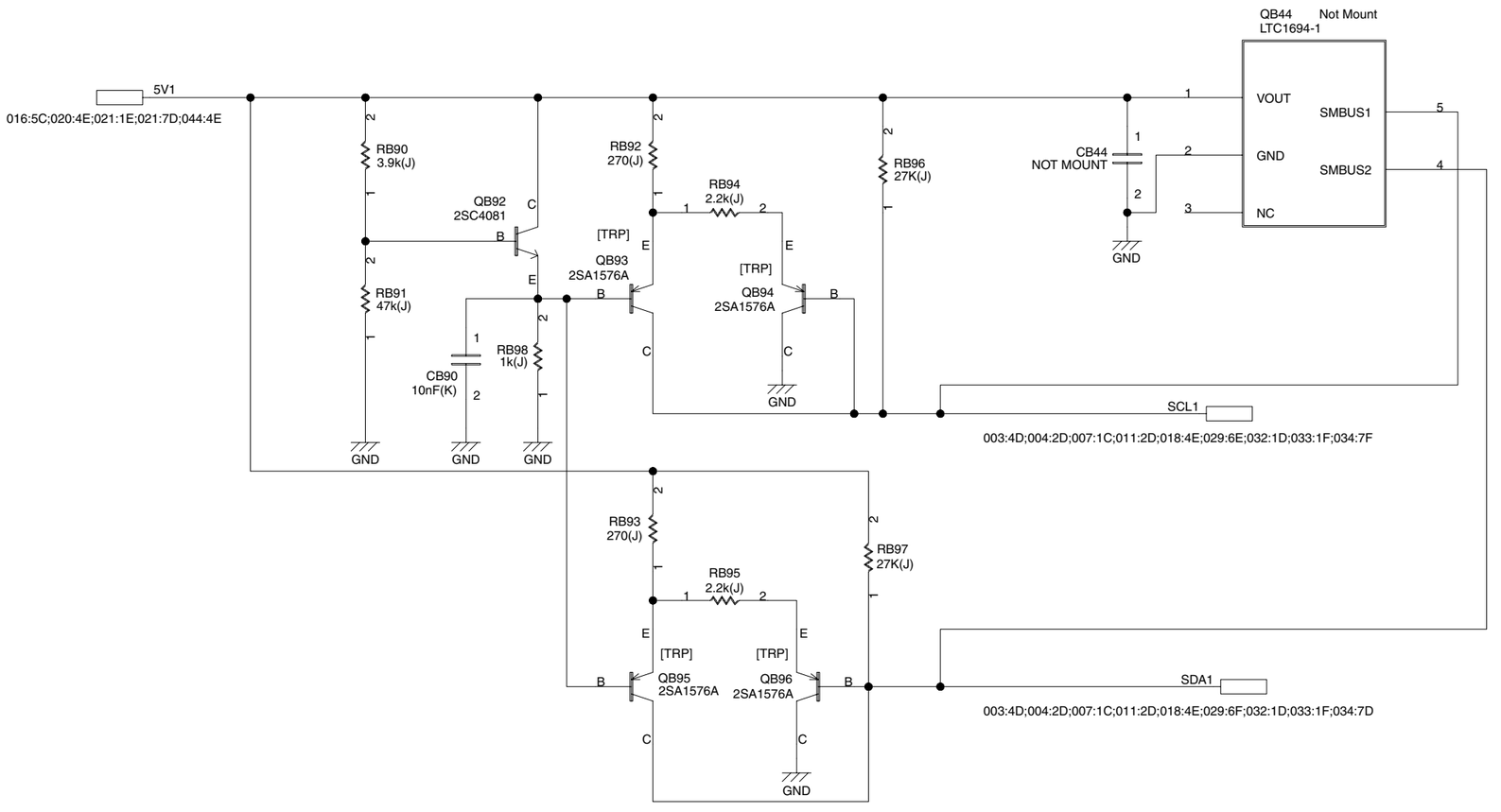






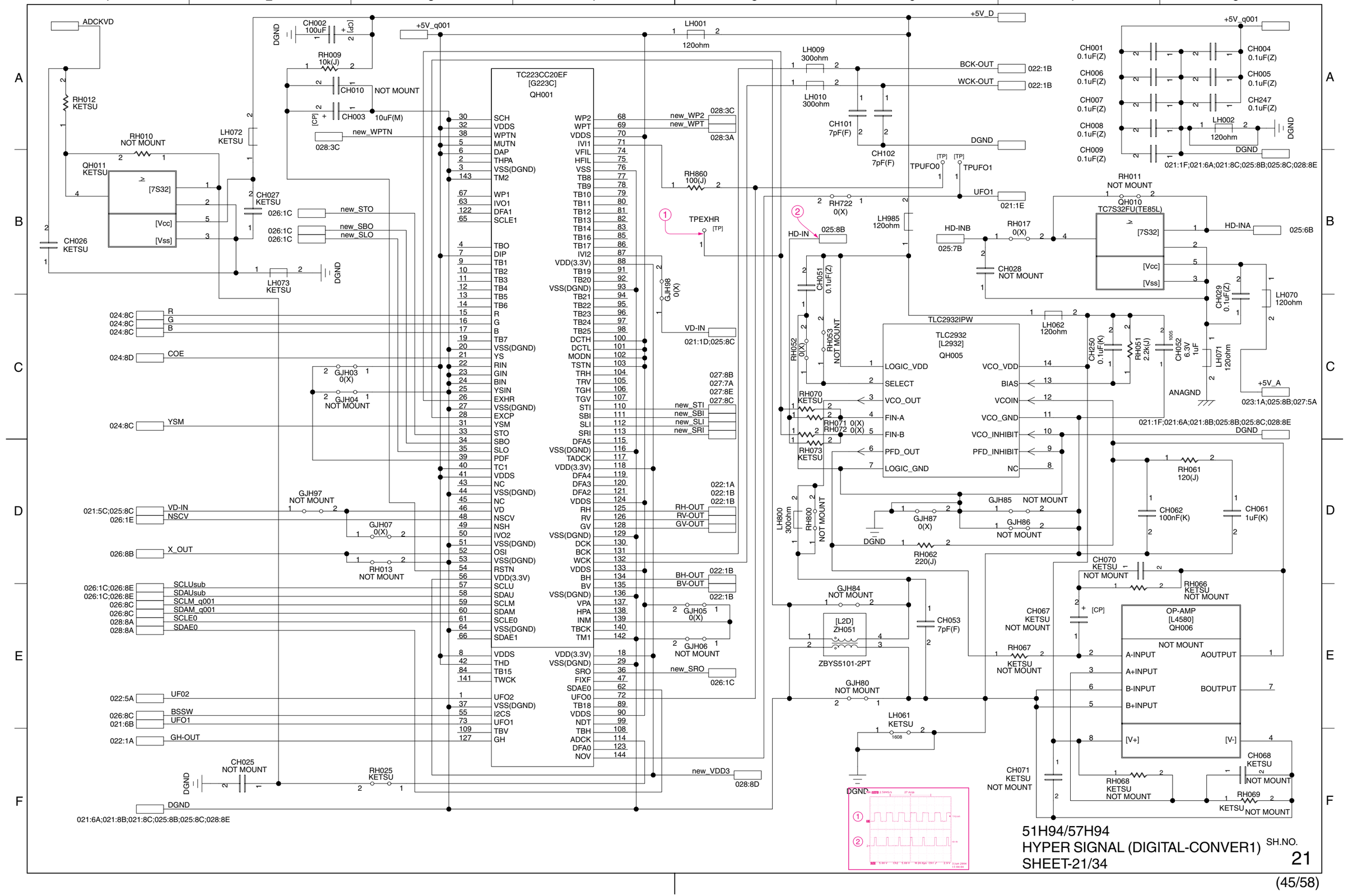
51H94/57H94
HYPER SIGNAL (REGULATOR)
SHEET-19/34

SH.NO.
19



51H94/57H94
HYPER SIGNAL (MAICON9)
SHEET-20/34

SH.NO.
20


TC223CC20EF
[G223C]
QH001
TLC2932IPW
TLC2932
[L2932]
QH005
OP-AMP
[L4580]
QH006
TC7S32FU(TE85L)
QH010
QH011
ADCKVD
+5V_q001
+5V_D
DGND
LH001
120ohm
LH009
300ohm
LH010
300ohm
BCK-OUT
WCK-OUT
022:1B
CH101
7pF(F)
CH102
7pF(F)
TPUFO0
TPUFO1
UFO1
021:1E
RH860
100(J)
RH722
0(X)
TPEXHR
HD-IN
025:8B
HD-INB
025:7B
HD-INA
025:6B
RH017
0(X)
LH985
120ohm
CH028
NOT MOUNT
CH001
0.1uF(Z)
CH004
0.1uF(Z)
CH005
0.1uF(Z)
CH006
0.1uF(Z)
CH007
0.1uF(Z)
CH247
0.1uF(Z)
CH008
0.1uF(Z)
CH009
0.1uF(Z)
LH002
120ohm
021:1F;021:6A;021:8C;025:8B;025:8C;028:8E
CH002
100uF
RH009
10k(J)
CH010
NOT MOUNT
CH003
10uF(M)
new_WPTN
028:3C
LH072
KETSU
RH012
KETSU
RH010
NOT MOUNT
QH011
KETSU
CH026
KETSU
CH027
KETSU
026:1C
new_STO
new_SBO
new_SLO
LH073
KETSU
new_WP2
new_WPT
028:3A
GJH98
0(X)
VD-IN
021:1D;025:8C
CH051
0.1uF(Z)
RH052
0(X)
RH053
NOT MOUNT
RH070
KETSU
RH071 0(X)
RH072 0(X)
RH073
KETSU
LOGIC_VDD
SELECT
VCO_OUT
FIN-A
FIN-B
PFD_OUT
LOGIC_GND
VCO_VDD
BIAS
VCOIN
VCO_GND
VCO_INHIBIT
PFD_INHIBIT
NC
LH062
120ohm
CH250
0.1uF(K)
RH051
2.2K(J)
CH052
6.3V
1uF
LH071
120ohm
ANAGND
+5V_A
023:1A;025:8B;027:5A
021:1F;021:6A;021:8B;025:8B;025:8C;028:8E
RH061
120(J)
CH062
100nF(K)
CH061
1uF(K)
LH800
300ohm
RH800
NOT MOUNT
GJH85
NOT MOUNT
GJH86
NOT MOUNT
GJH87
0(X)
RH062
220(J)
CH070
KETSU
NOT MOUNT
RH066
KETSU
NOT MOUNT
CH067
KETSU
NOT MOUNT
RH067
KETSU
NOT MOUNT
CH068
KETSU
NOT MOUNT
RH068
KETSU
NOT MOUNT
RH069
KETSU
NOT MOUNT
CH071
KETSU
NOT MOUNT
GJH84
NOT MOUNT
[L2D]
ZH051
ZBYS5101-2PT
CH053
7pF(F)
GJH80
NOT MOUNT
LH061
KETSU
1608
CH029
0.1uF(Z)
LH070
120ohm
GJH03
0(X)
GJH04
NOT MOUNT
GJH05
0(X)
GJH06
NOT MOUNT
GJH97
NOT MOUNT
GJH07
0(X)
RH013
NOT MOUNT
RH025
KETSU
CH025
NOT MOUNT
R
G
B
COE
YSM
VD-IN
NSCV
X_OUT
SCLUsub
SDAUsub
SCLM_q001
SDAM_q001
SCLE0
SDAE0
UF02
BSSW
UFO1
GH-OUT
new_STI
new_SBI
new_SLI
new_SRI
RH-OUT
RV-OUT
GV-OUT
BH-OUT
BV-OUT
new_SRO
026:1C
new_VDD3
028:8D
022:1A
022:1B
027:8B
027:7A
027:8E
027:8C
024:8C
024:8D
026:1C;026:8E
026:8C
026:8B
028:8A
021:5C;025:8C
026:1E
021:6A;021:8B;021:8C;025:8B;025:8C;028:8E
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER1)
SHEET-21/34
SH.NO.
21
(45/58)

+5V_D
021:6A;024:7F;026:1D;026:5E;028:3C;028:7C;028:8A

LH983 120ohm

RH512 NOT MOUNT

UF02

DGND

LH984 120ohm

RH506 100(J)
RH505 100(J)
RH504 100(J)
RH503 100(J)
RH502 100(J)
RH501 100(J)
RH508 100(J)
RH507 100(J)

021:5D RH-OUT
021:1F GH-OUT
021:5D BH-OUT
021:5D RV-OUT
021:5D GV-OUT
021:5E BV-OUT
021:6A BCK-OUT
021:6A WCK-OUT

CD0031AM
[L0031]
QH501
CD0031AM

1	DIN3	DIN4	48
2	DIN2	DIN5	47
3	DIN1	DIN6	46
4	BCLK	MUTEB	45
5	WCLK	DVDD	44
6	DGND	DGND	43
7	GND4	GND1	42
8	OUT4	OUT1	41
9	REF4	REF1	40
10	VDD4	VDD1	39
11	GND6	GND3	38
12	OUT6	OUT3	37
13	REF6	REF3	36
14	VDD6	VDD3	35
15	GND5	GND2	34
16	OUT5	OUT2	33
17	REF5	REF2	32
18	VDD5	VDD2	31
19	NC	NC	30
20	NC	GNDC2	29
21	NC	NC	28
22	NC	NC	27
23	GNDC1	VDDC	26
24	NC	OUTC	25

CH507 0.1uF(K)
CH517 0.1uF(Z)
RH509 470k(J)
[CP] CH707 47uF

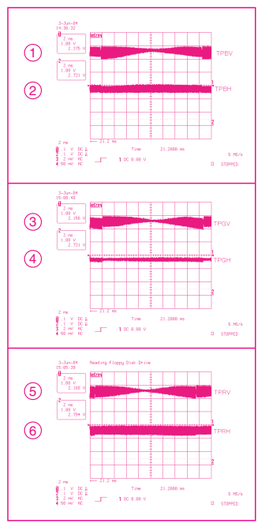
CH514 0.1uF(Z)
LH980 120ohm
025:8A +5V_B
CH504 47uF [CP]
CH516 0.1uF(Z)
CH506 47uF [CP]
CH515 0.1uF(Z)
CH505 47uF [CP]

[CP] CH501 47uF
CH511 0.1uF(Z)
[CP] CH503 47uF
CH513 0.1uF(Z)
[CP] CH502 47uF
CH512 0.1uF(Z)
CH518 0.1uF(Z)

RH510 NOT MOUNT

ANAGND

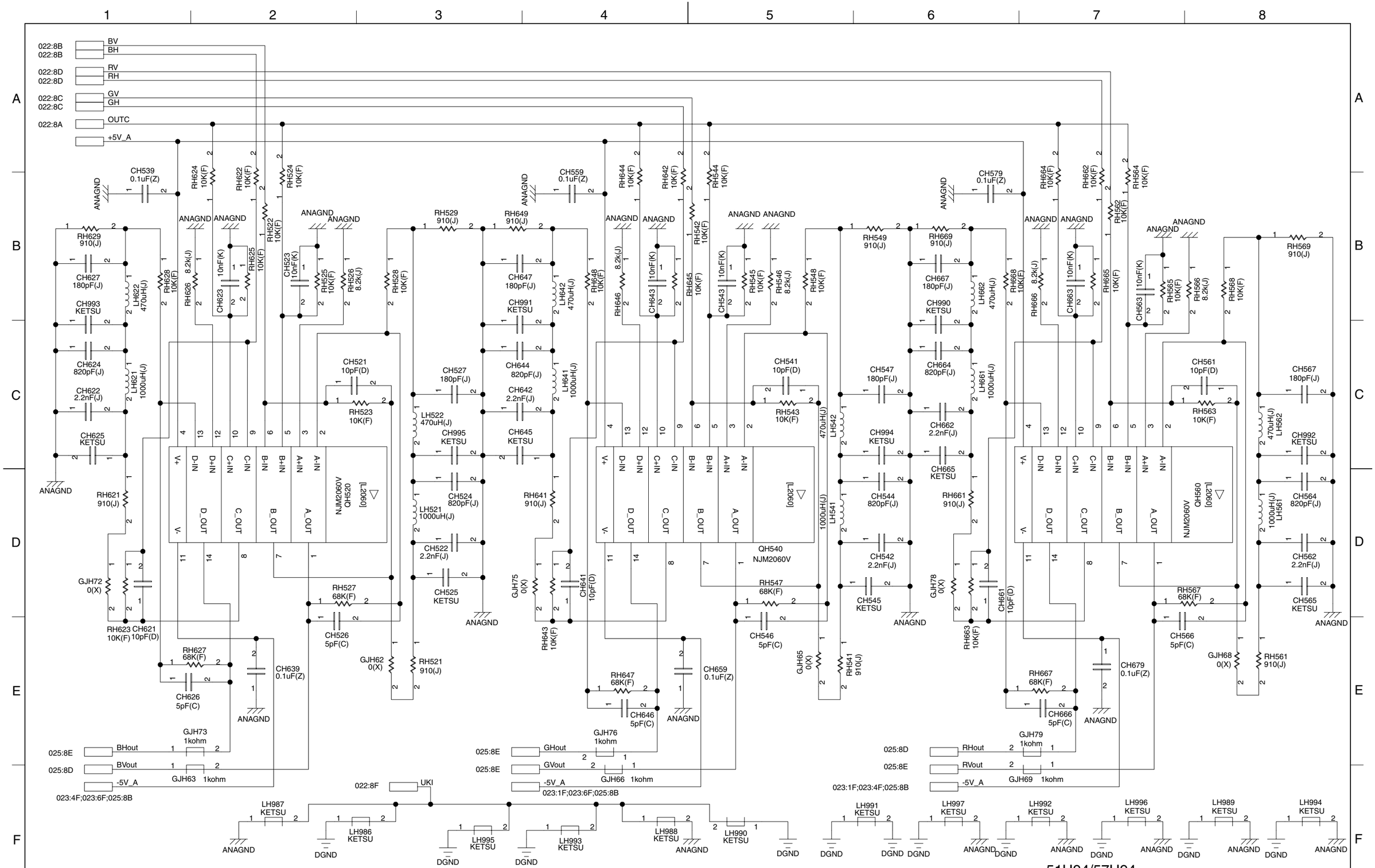
ZBYS5101-2PT ZH500 [L2D] — [TP] TPOUTC — OUTC — 023:1A
ZBYS5101-2PT ZH162 [L2D] — ① [TP] TPBV — BV — 023:1A
ZBYS5101-2PT ZH161 [L2D] — ② [TP] TPBH — BH — 023:1A
ZBYS5101-2PT ZH142 [L2D] — ③ [TP] TPGV — GV — 023:1A
ZBYS5101-2PT ZH141 [L2D] — ④ [TP] TPGH — GH — 023:1A
ZBYS5101-2PT ZH122 [L2D] — ⑤ [TP] TPRV — RV — 023:1A
ZBYS5101-2PT ZH121 [L2D] — ⑥ [TP] TPRH — RH — 023:1A



RH994 NOT MOUNT — DGND
RH997 NOT MOUNT — DGND
RH991 NOT MOUNT — DGND
RH996 NOT MOUNT — DGND DGND
LH981 KETSU — DGND
LH982 KETSU — DGND DGND
LH124 KETSU — ANAGND
GJ90 KETSU 1608 — DGND — GND
GJ91 KETSU 1608 — GND
GJ92 KETSU 1608 — GND
GJ93 KETSU 1608 — GND
UKI — 023:3F

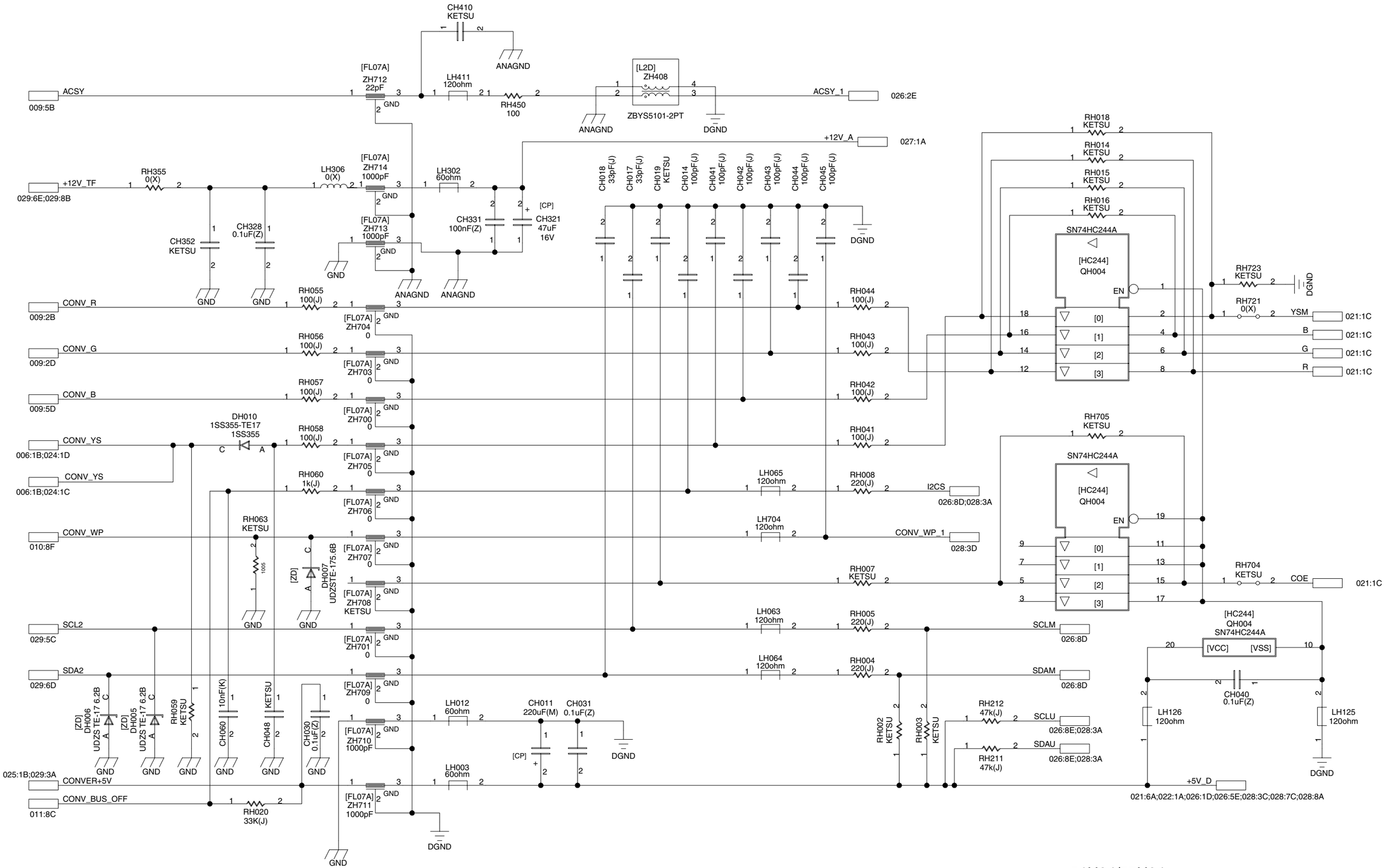
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER2)
SHEET-22/34

SH.NO.
22



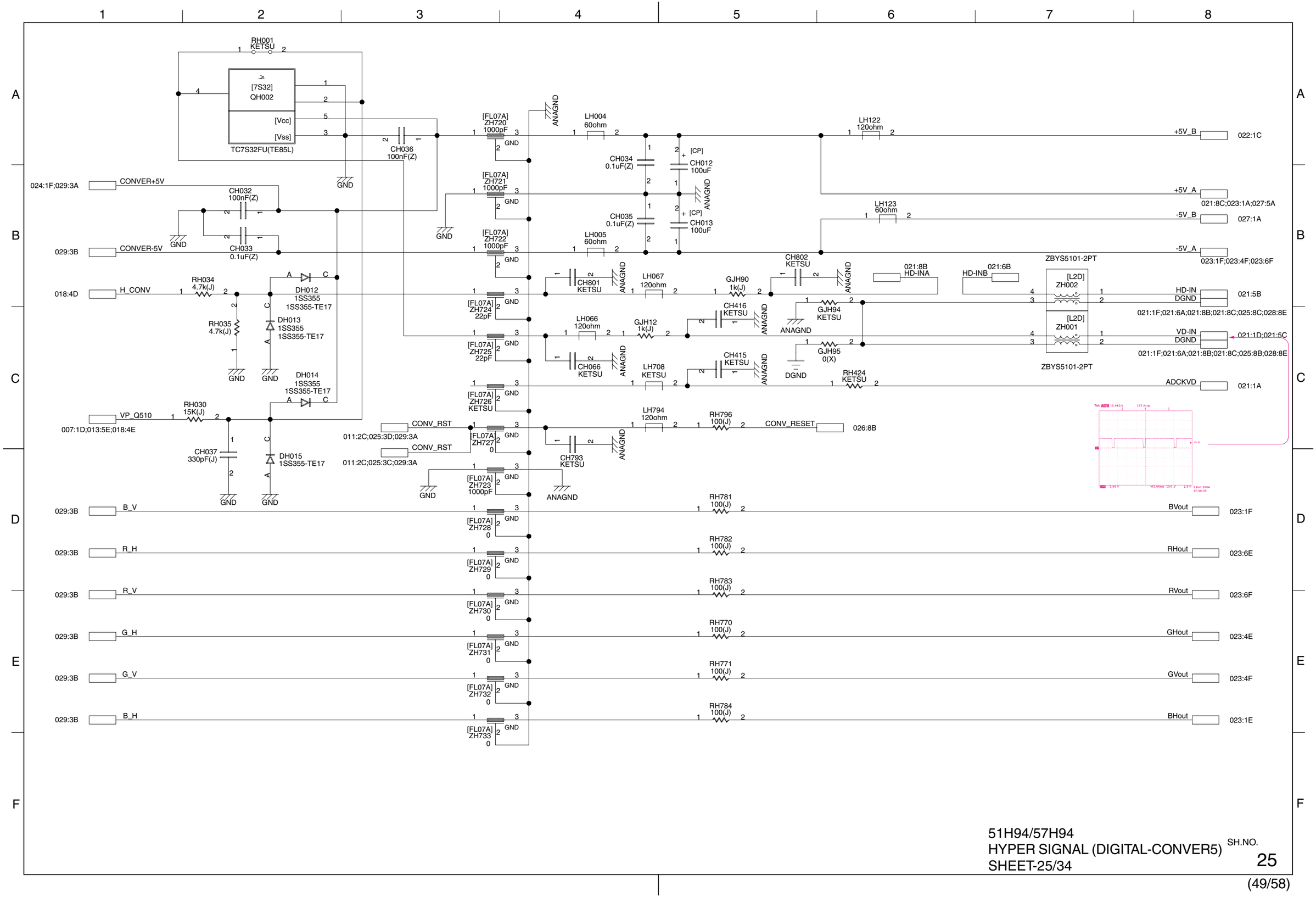
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER3)
SHEET-23/34

SH.NO. 23



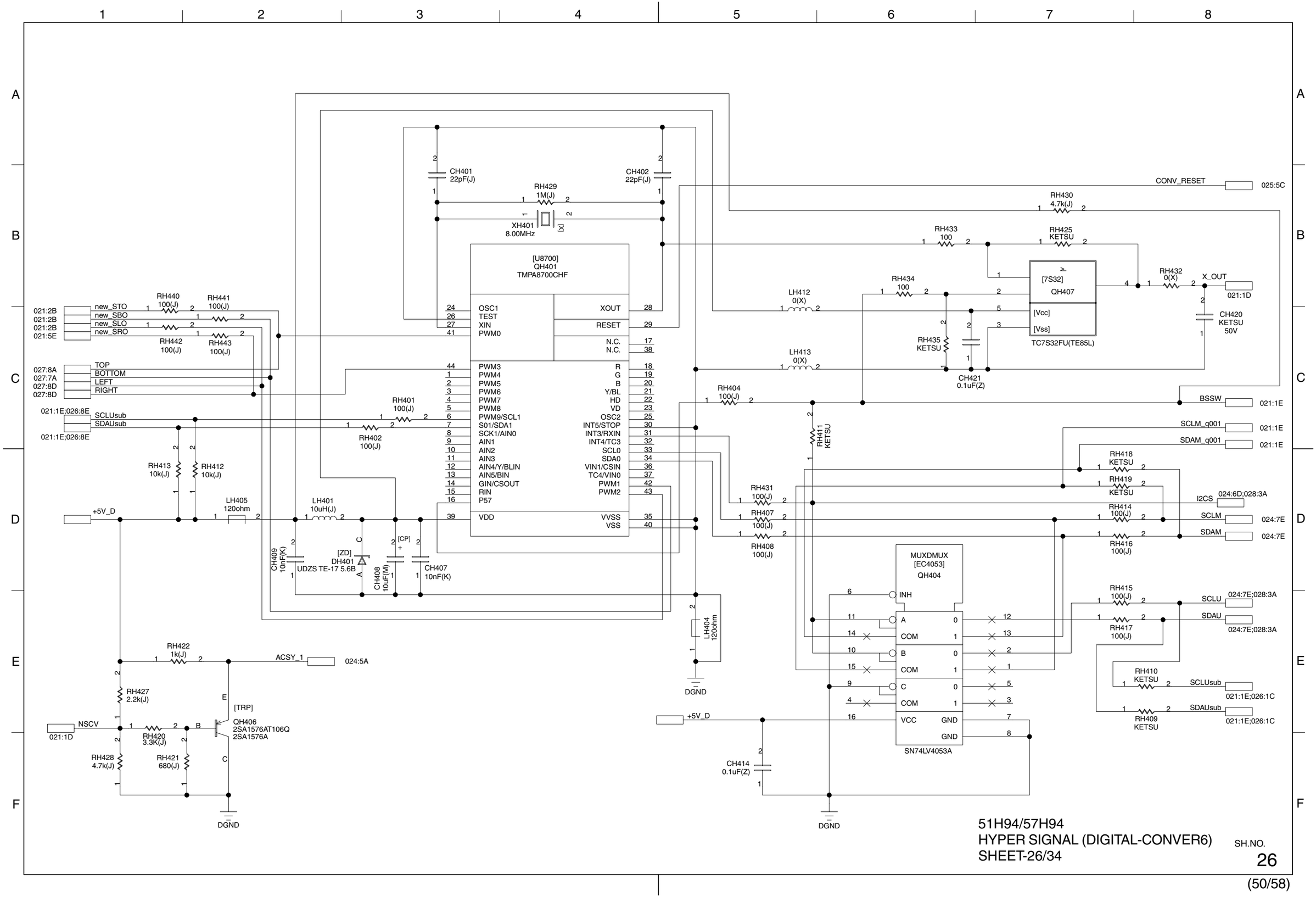
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER4)
SHEET-24/34

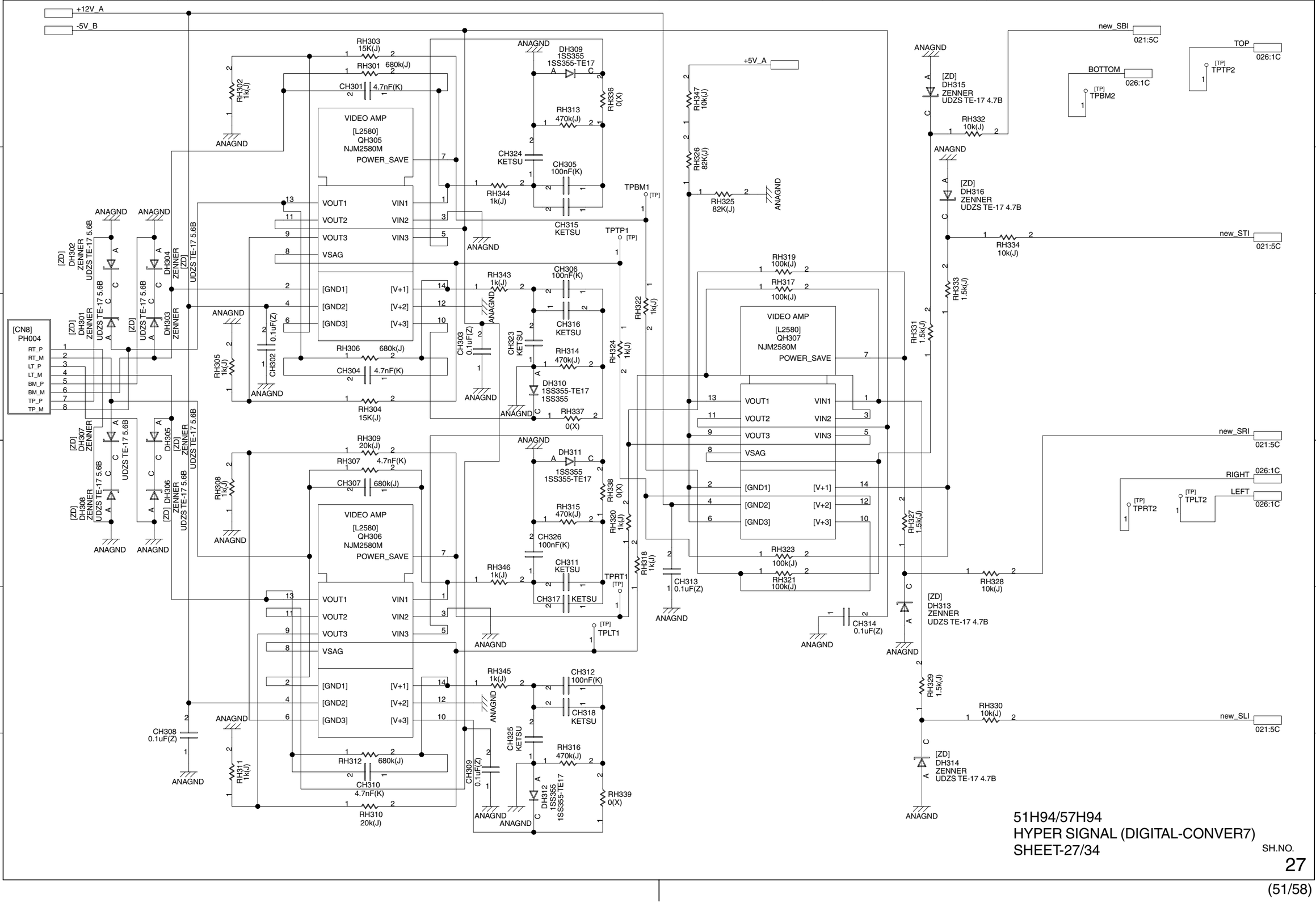
SH.NO.
24

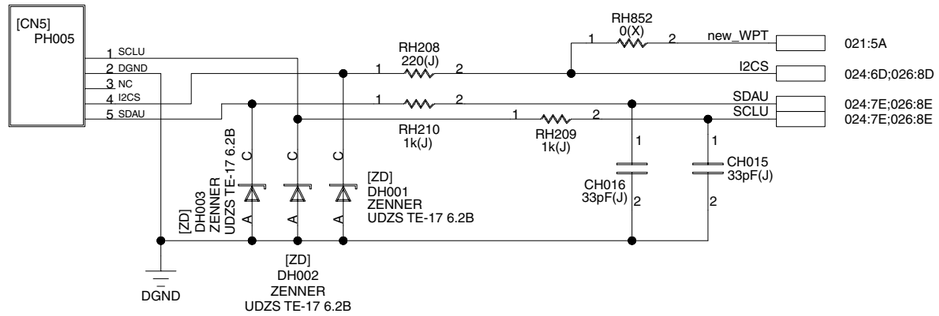


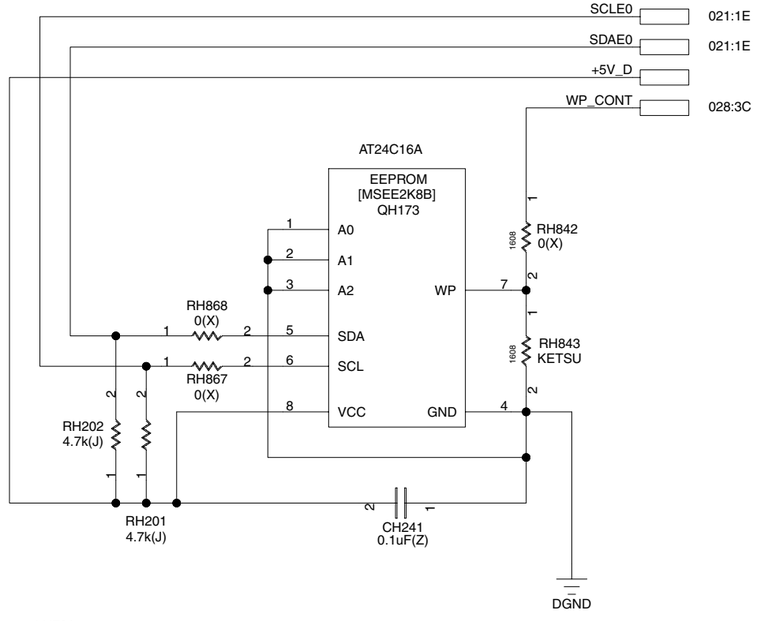
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER5)
SHEET-25/34

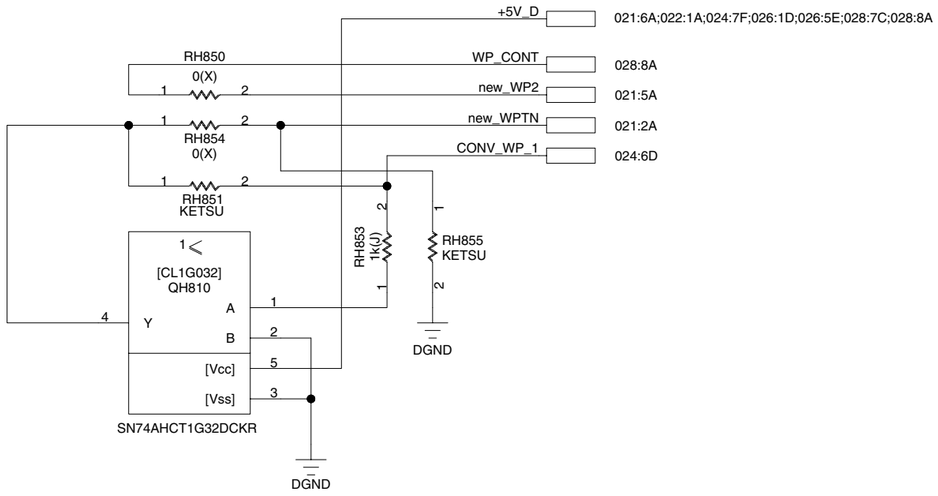
SH.NO.
25

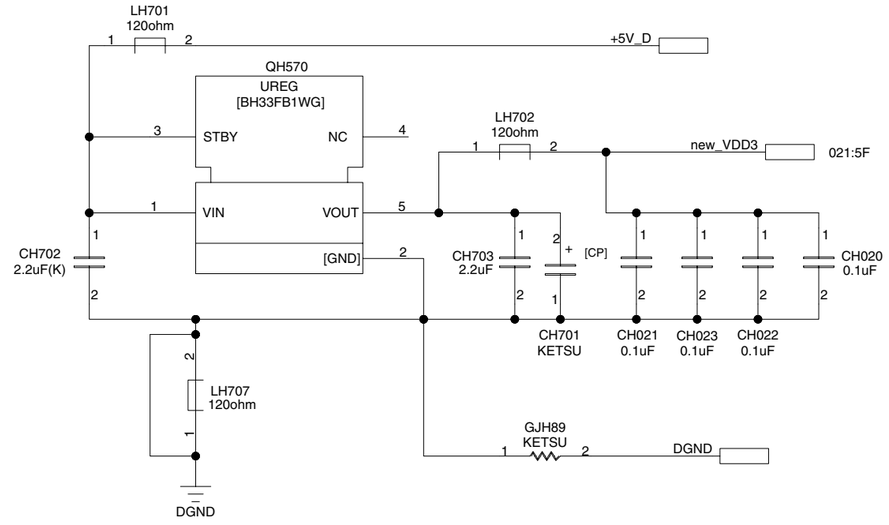

CH401 22pF(J)
CH402 22pF(J)
RH429 1M(J)
XH401 8.00MHz
[U8700] QH401 TMPA8700CHF
OSC1
TEST
XIN
PWM0
XOUT
RESET
N.C.
N.C.
PWM3
PWM4
PWM5
PWM6
PWM7
PWM8
PWM9/SCL1
S01/SDA1
SCK1/AIN0
AIN1
AIN2
AIN3
AIN4/Y/BLIN
AIN5/BIN
GIN/CSOUT
RIN
P57
R
G
B
Y/BL
HD
VD
OSC2
INT5/STOP
INT3/RXIN
INT4/TC3
SCL0
SDA0
VIN1/CSIN
TC4/VIN0
PWM1
PWM2
VDD
VSS
VSS
CONV_RESET
025:5C
RH430 4.7k(J)
RH433 100
RH425 KETSU
[7S32] QH407
[Vcc]
[Vss]
TC7S32FU(TE85L)
RH432 0(X)
X_OUT
021:1D
CH420 KETSU 50V
LH412 0(X)
RH434 100
RH435 KETSU
LH413 0(X)
CH421 0.1uF(Z)
RH404 100(J)
RH411 KETSU
BSSW
021:1E
SCLM_q001
SDAM_q001
RH418 KETSU
RH419 KETSU
I2CS
024:6D;028:3A
RH414 100(J)
SCLM
024:7E
RH416 100(J)
SDAM
024:7E
RH431 100(J)
RH407 100(J)
RH408 100(J)
MUXDMUX [EC4053] QH404
INH
A
B
C
COM
VCC
GND
SN74LV4053A
RH415 100(J)
RH417 100(J)
SCLU
024:7E;028:3A
SDAU
024:7E;028:3A
RH410 KETSU
RH409 KETSU
SCLUsub
021:1E;026:1C
SDAUsub
021:1E;026:1C
CH414 0.1uF(Z)
LH404 120ohm
DGND
new_STO
new_SBO
new_SLO
new_SRO
021:2B
021:2B
021:2B
021:5E
RH440 100(J)
RH441 100(J)
RH442 100(J)
RH443 100(J)
TOP
BOTTOM
LEFT
RIGHT
027:8A
027:7A
027:8D
027:8D
SCLUsub
SDAUsub
021:1E;026:8E
021:1E;026:8E
RH401 100(J)
RH402 100(J)
RH413 10k(J)
RH412 10k(J)
+5V_D
LH405 120ohm
LH401 10uH(J)
CH409 10nF(K)
[ZD] DH401 UDZS TE-17 5.6B
CH408 10uF(M)
[CP]
CH407 10nF(K)
RH422 1k(J)
ACSY_1
024:5A
RH427 2.2k(J)
[TRP]
QH406 2SA1576AT106Q 2SA1576A
NSCV
021:1D
RH420 3.3K(J)
RH428 4.7k(J)
RH421 680(J)
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER6)
SHEET-26/34
SH.NO.
26


+12V_A
-5V_B
[CN8]
PH004
RT_P
RT_M
LT_P
LT_M
BM_P
BM_M
TP_P
TP_M
RH303 15K(J)
RH301 680k(J)
CH301 4.7nF(K)
RH302 1k(J)
ANAGND
VIDEO AMP
[L2580]
QH305
NJM2580M
POWER_SAVE
VOUT1
VOUT2
VOUT3
VSAG
[GND1]
[GND2]
[GND3]
VIN1
VIN2
VIN3
[V+1]
[V+2]
[V+3]
DH309 1SS355 1SS355-TE17
RH336 0(X)
RH313 470k(J)
CH324 KETSU
CH305 100nF(K)
RH344 1k(J)
CH315 KETSU
TPBM1
TPTP1
RH343 1k(J)
CH306 100nF(K)
CH316 KETSU
CH323 KETSU
RH314 470k(J)
DH310 1SS355-TE17 1SS355
RH337 0(X)
RH322 1k(J)
RH324 1k(J)
CH303 0.1uF(Z)
RH306 680k(J)
CH304 4.7nF(K)
RH304 15K(J)
RH305 1k(J)
CH302 0.1uF(Z)
[ZD] DH302 ZENNER UDZS TE-17 5.6B
[ZD] DH301 ZENNER UDZS TE-17 5.6B
[ZD] DH304 ZENNER UDZS TE-17 5.6B
[ZD] DH303 ZENNER UDZS TE-17 5.6B
[ZD] DH307 ZENNER UDZS TE-17 5.6B
[ZD] DH308 ZENNER UDZS TE-17 5.6B
[ZD] DH305 ZENNER UDZS TE-17 5.6B
[ZD] DH306 ZENNER UDZS TE-17 5.6B
RH309 20k(J)
RH307 4.7nF(K)
CH307 680k(J)
RH308 1k(J)
DH311 1SS355 1SS355-TE17
RH338 0(X)
RH315 470k(J)
RH320 1k(J)
CH326 100nF(K)
CH311 KETSU
RH346 1k(J)
TPRT1
CH317 KETSU
RH318 1k(J)
CH313 0.1uF(Z)
TPLT1
RH345 1k(J)
CH312 100nF(K)
CH318 KETSU
CH325 KETSU
RH316 470k(J)
DH312 1SS355 1SS355-TE17
RH339 0(X)
CH309 0.1uF(Z)
CH308 0.1uF(Z)
RH311 1k(J)
RH312 680k(J)
CH310 4.7nF(K)
RH310 20k(J)
+5V_A
RH347 10k(J)
RH326 82K(J)
RH325 82K(J)
RH319 100k(J)
RH317 100k(J)
RH323 100k(J)
RH321 100k(J)
CH314 0.1uF(Z)
RH331 1.5k(J)
RH327 1.5k(J)
RH329 1.5k(J)
[ZD] DH313 ZENNER UDZS TE-17 4.7B
[ZD] DH314 ZENNER UDZS TE-17 4.7B
RH328 10k(J)
RH330 10k(J)
new_SBI
021:5C
TOP
026:1C
BOTTOM
026:1C
[TP] TPTP2
[TP] TPBM2
[ZD] DH315 ZENNER UDZS TE-17 4.7B
RH332 10k(J)
[ZD] DH316 ZENNER UDZS TE-17 4.7B
RH334 10k(J)
new_STI
021:5C
new_SRI
021:5C
RIGHT
026:1C
LEFT
026:1C
[TP] TPRT2
[TP] TPLT2
new_SLI
021:5C
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER7)
SHEET-27/34
SH.NO.
27
(51/58)

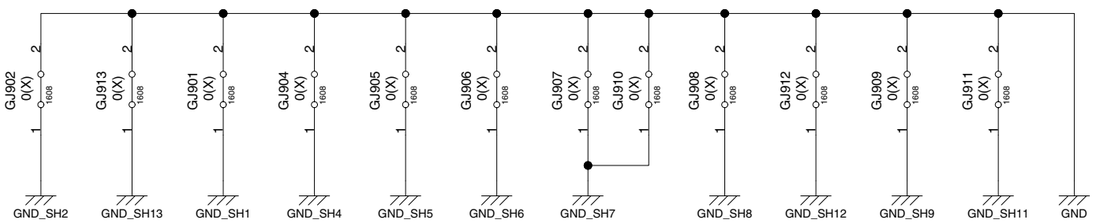






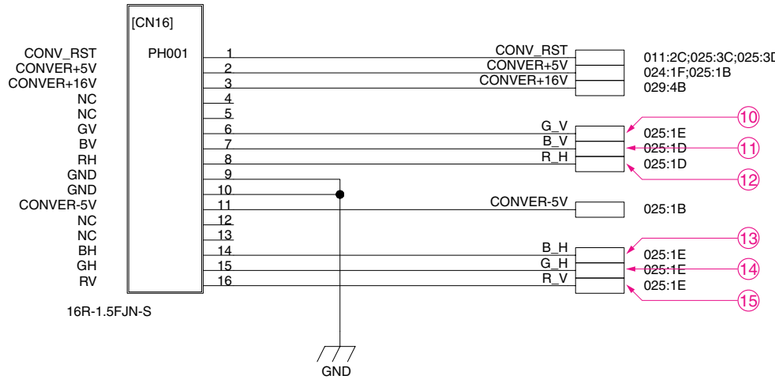


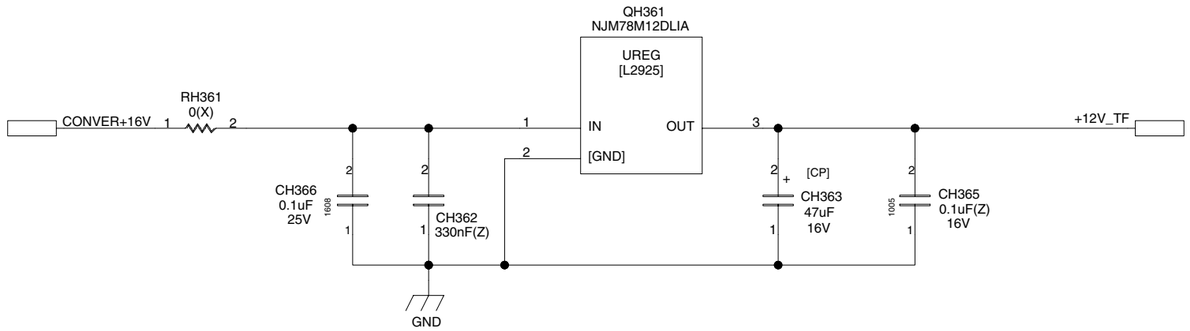
GND_JUMPER FOR SHIELD CASE

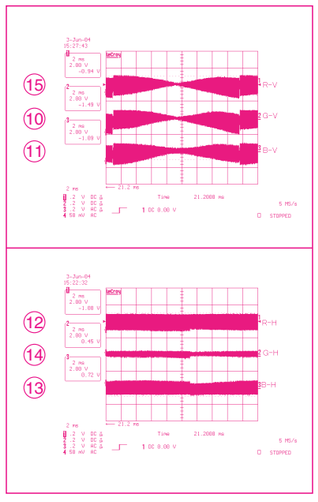


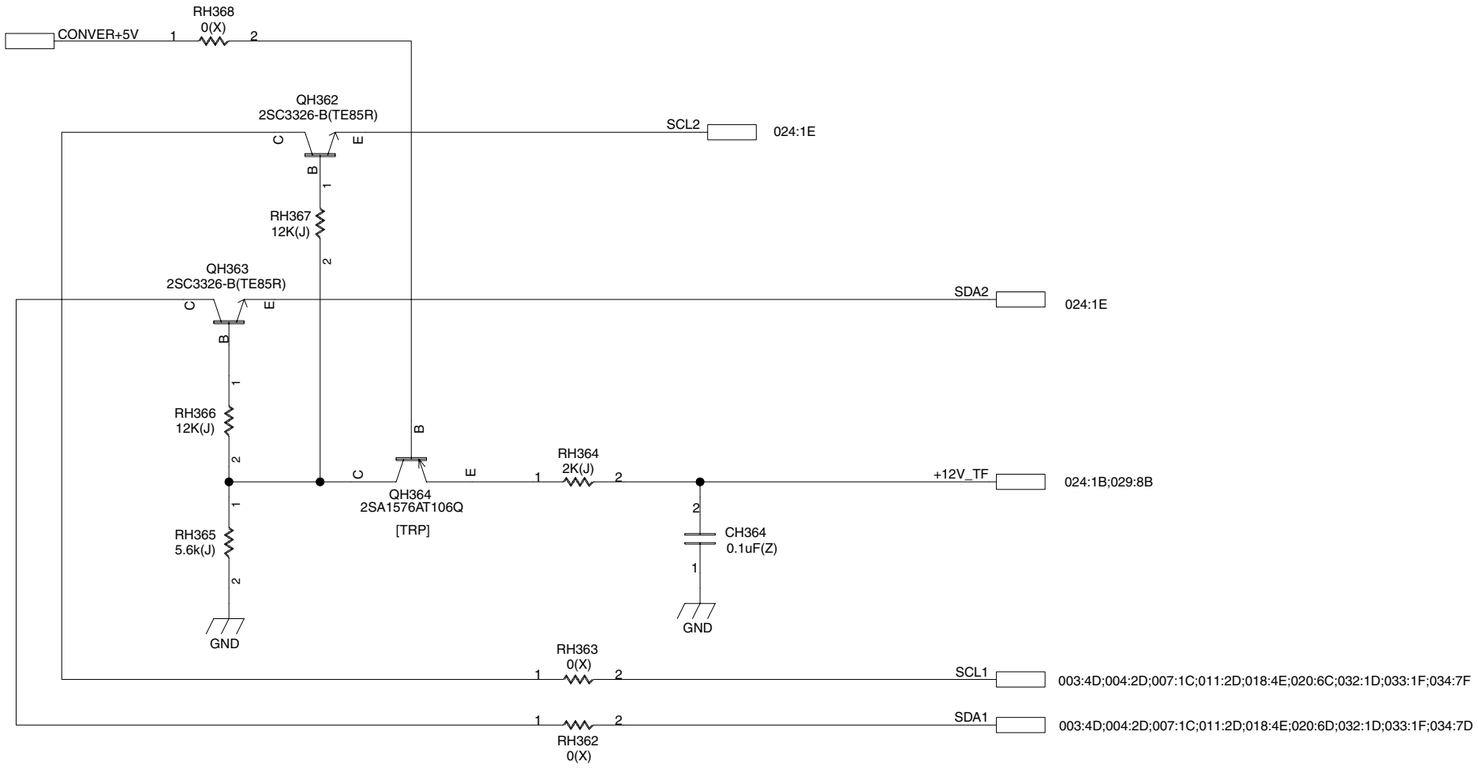
51H94/57H94
HYPER SIGNAL (DIGITAL-CONVER8)
SHEET-28/34

SH.NO.
28



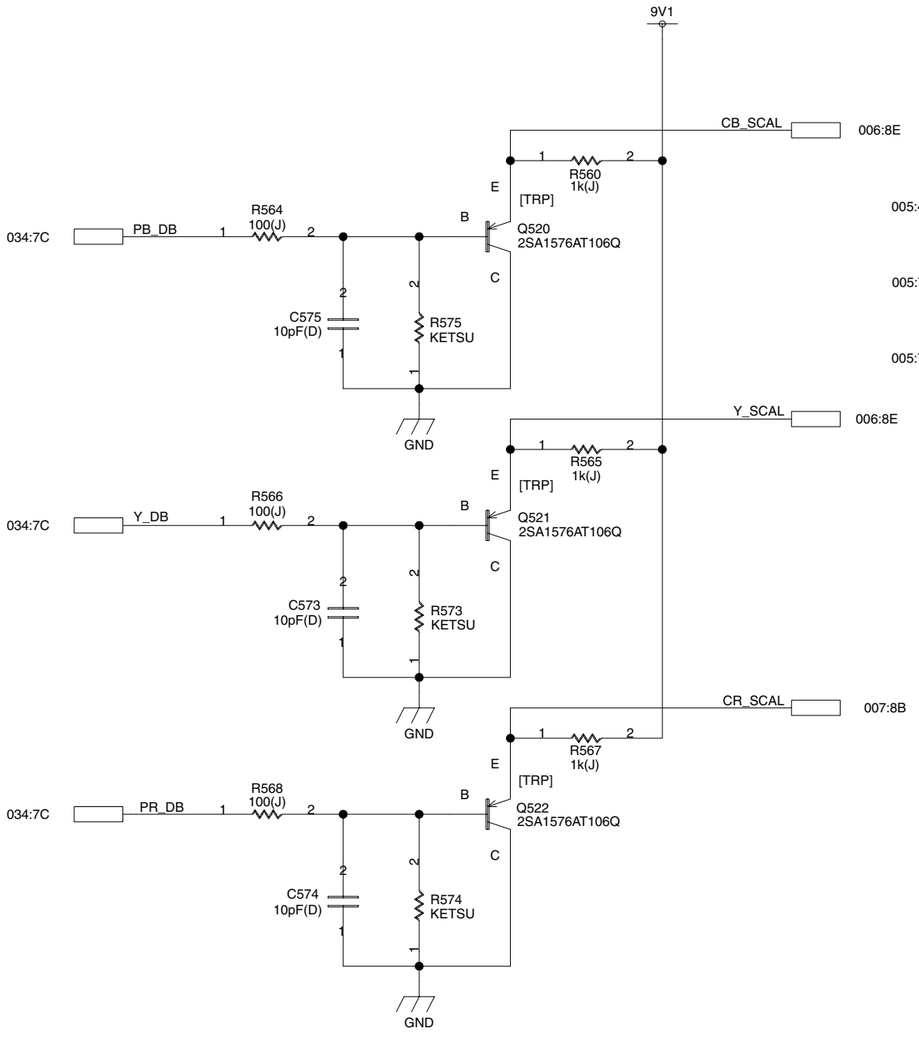


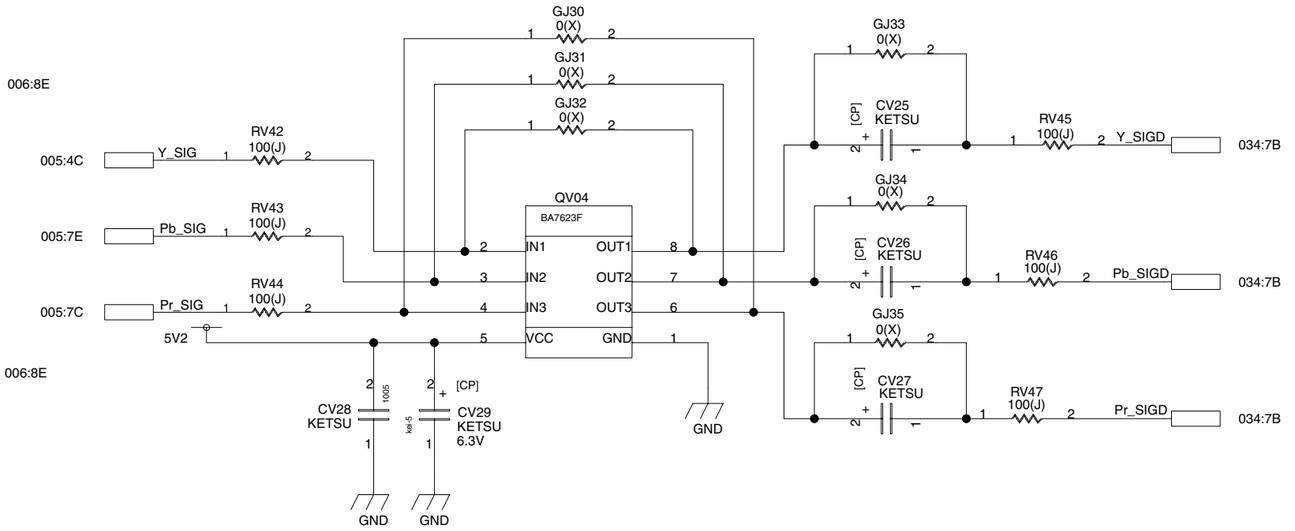


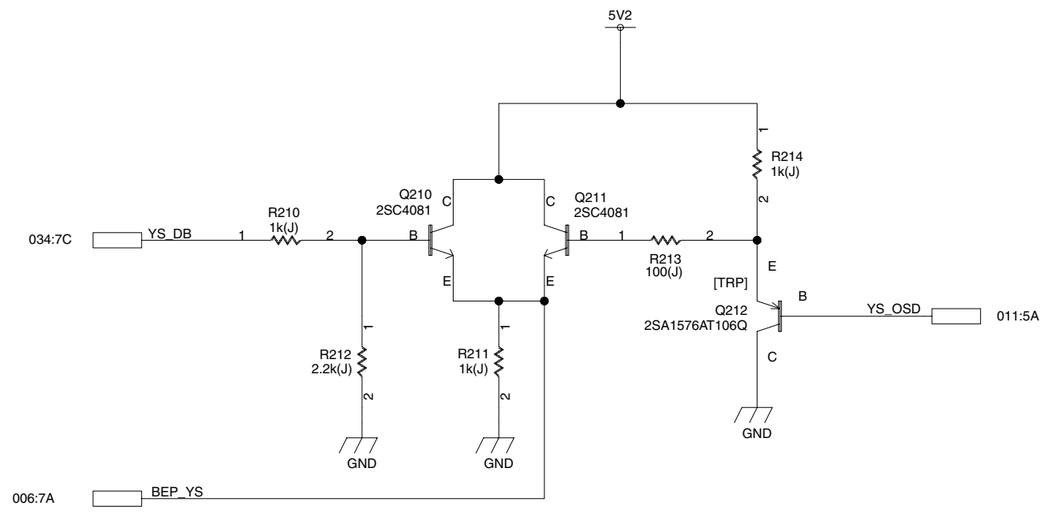


51H94/57H94
HYPER SIGNAL (CONVER-REG)
SHEET-29/34

SH.NO.
29

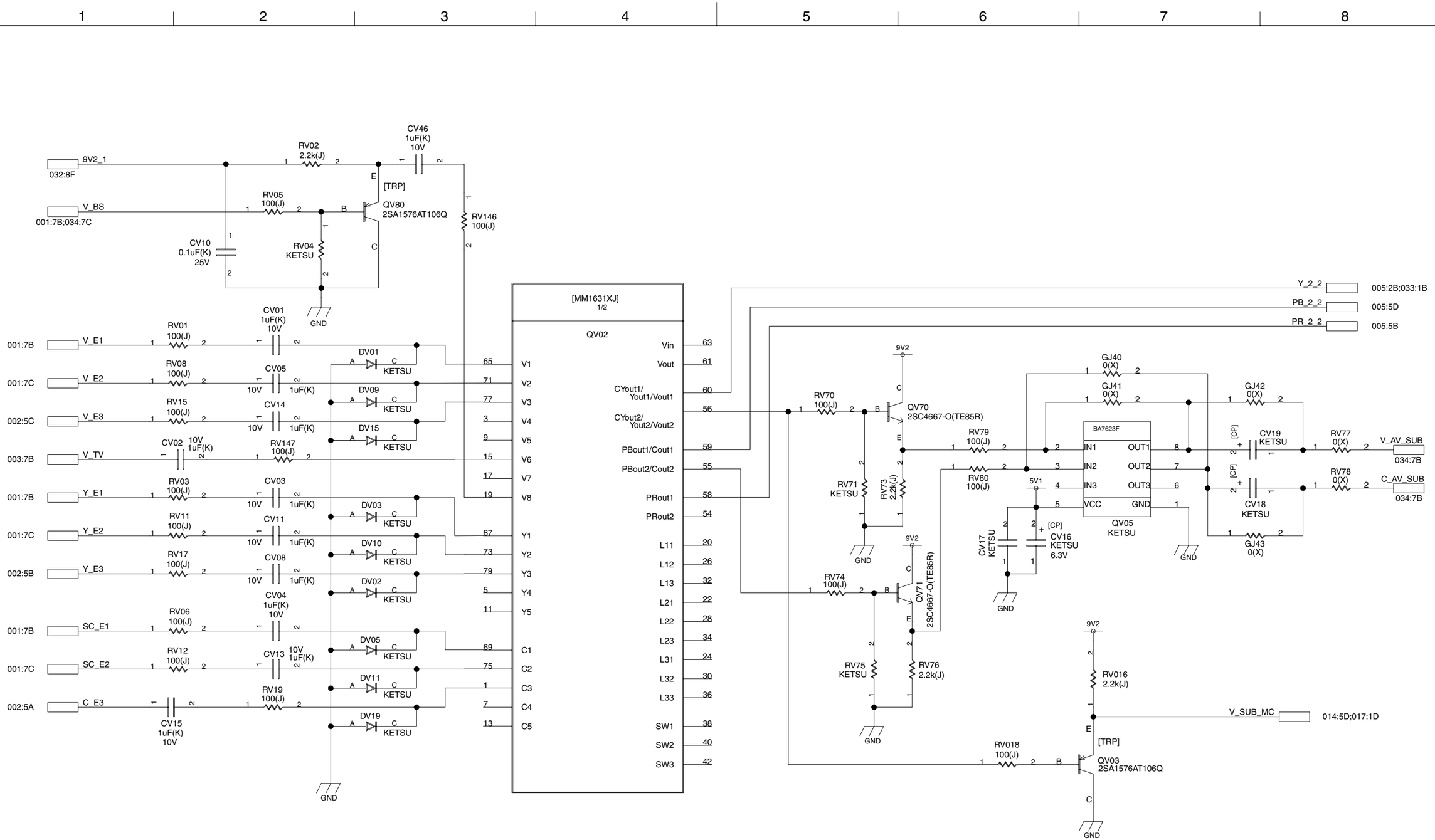






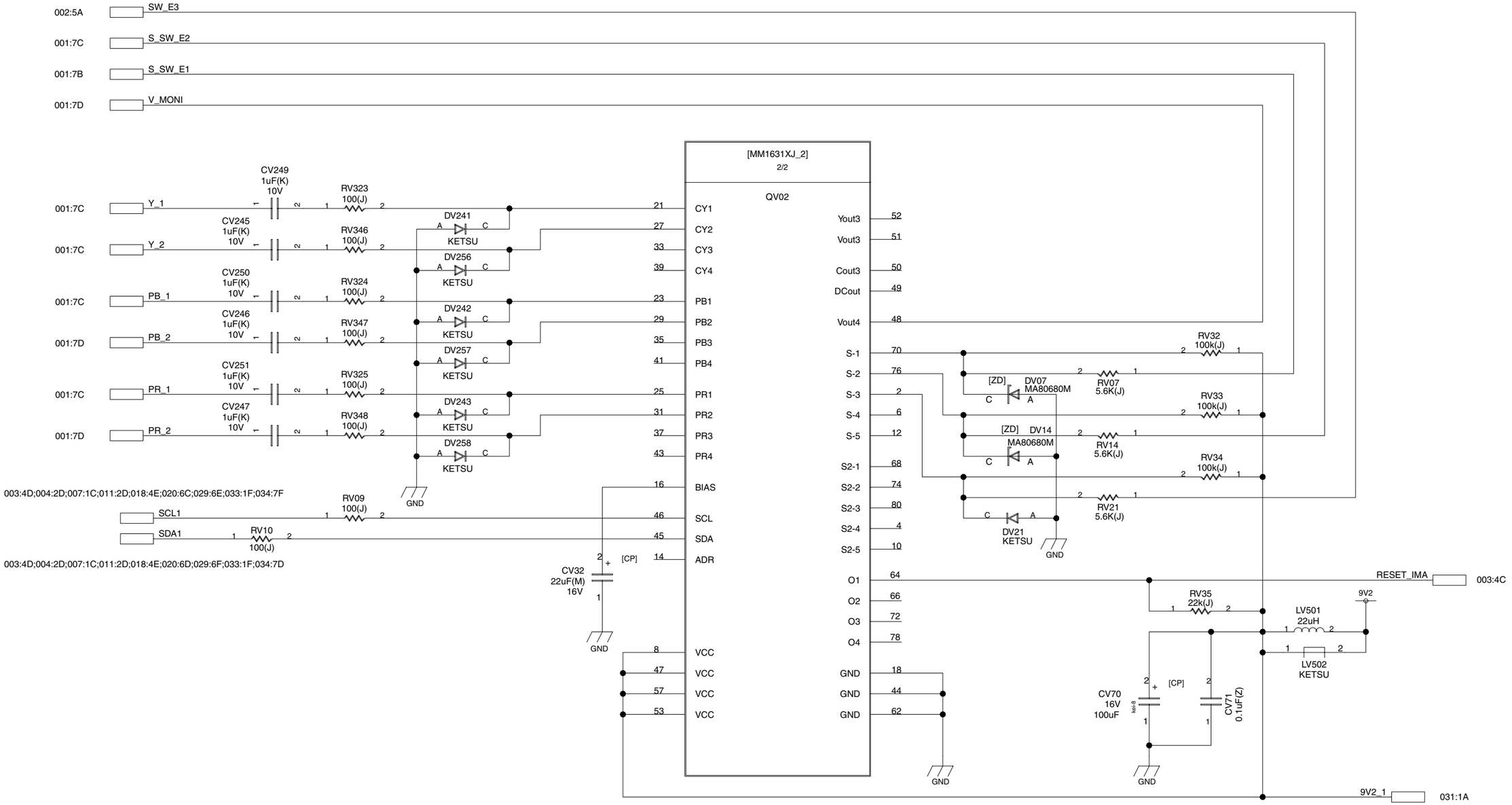
51H94/57H94
HYPER SIGNAL (30/34)
SHEET-30/34

SH.NO.
30
(54/58)



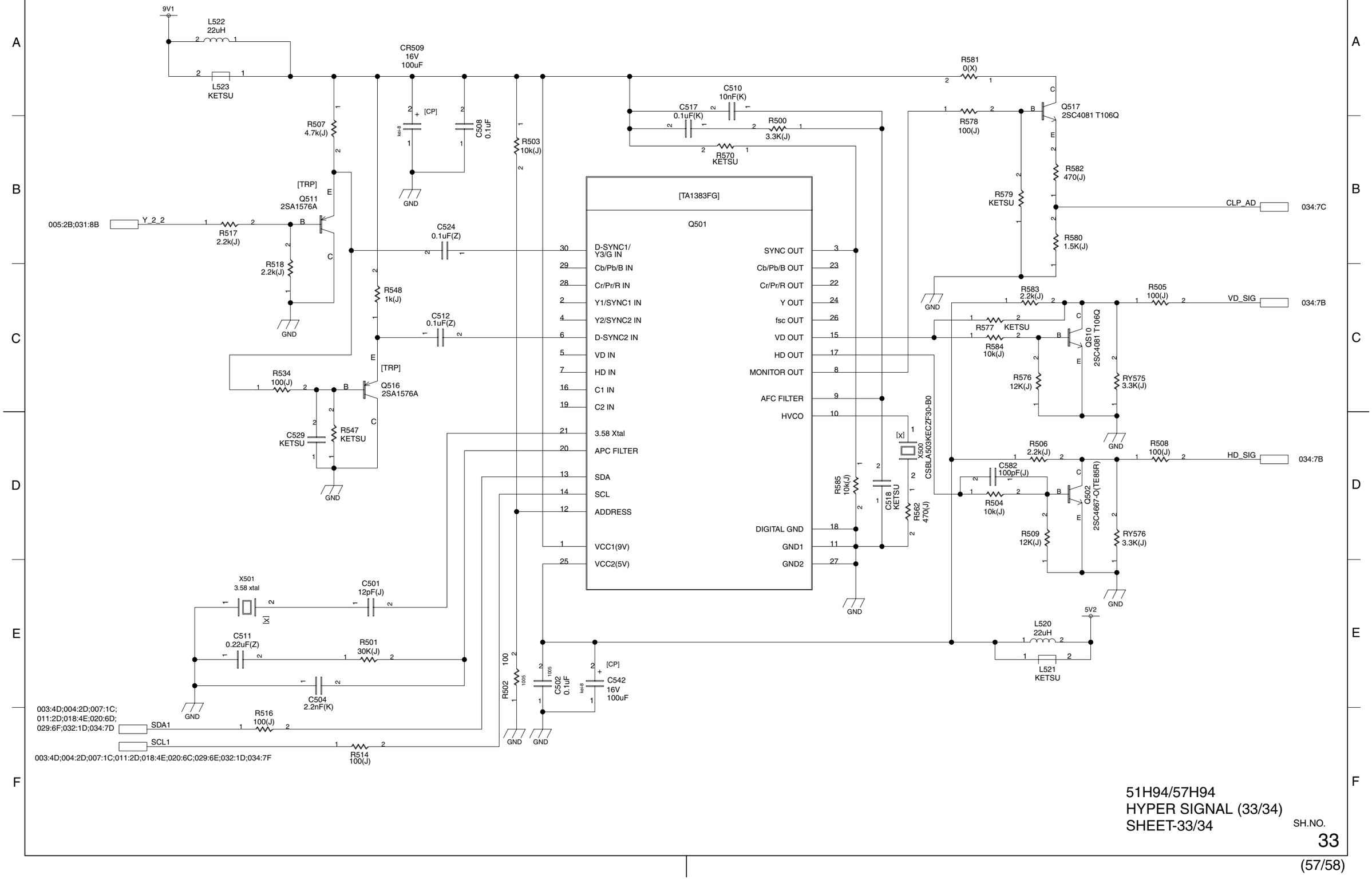
51H94/57H94
HYPER SIGNAL (31/34)
SHEET-31/34

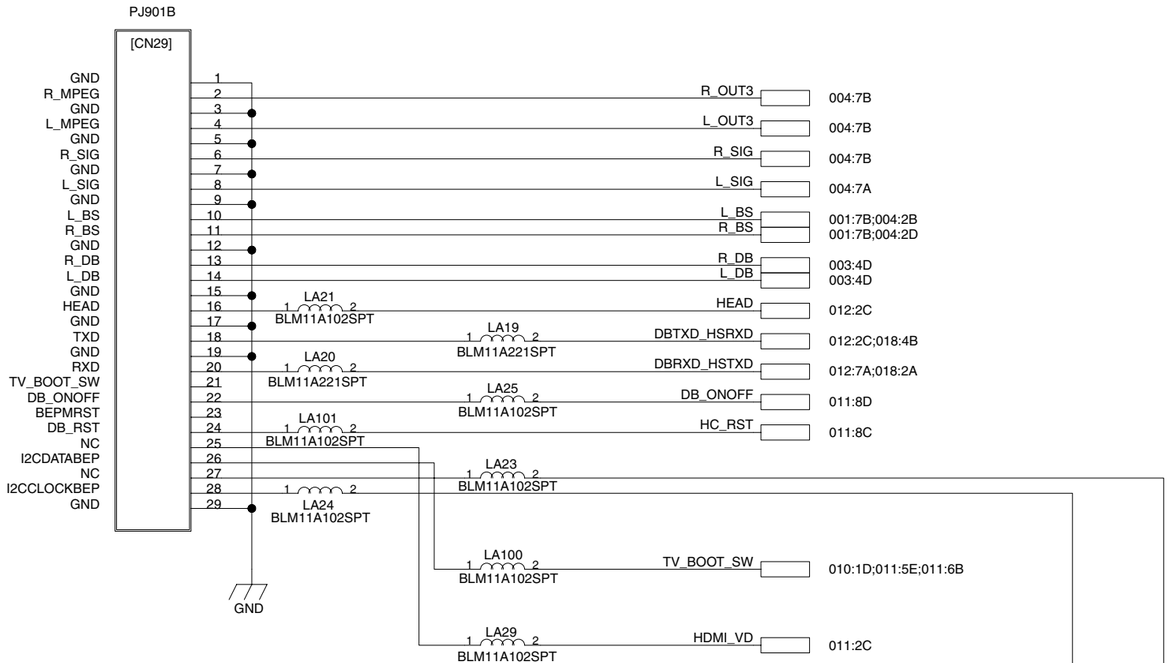
SH.NO.
31
(55/58)

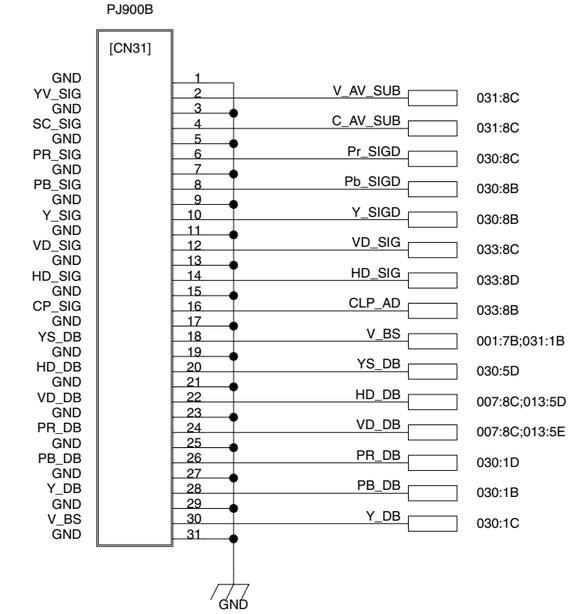


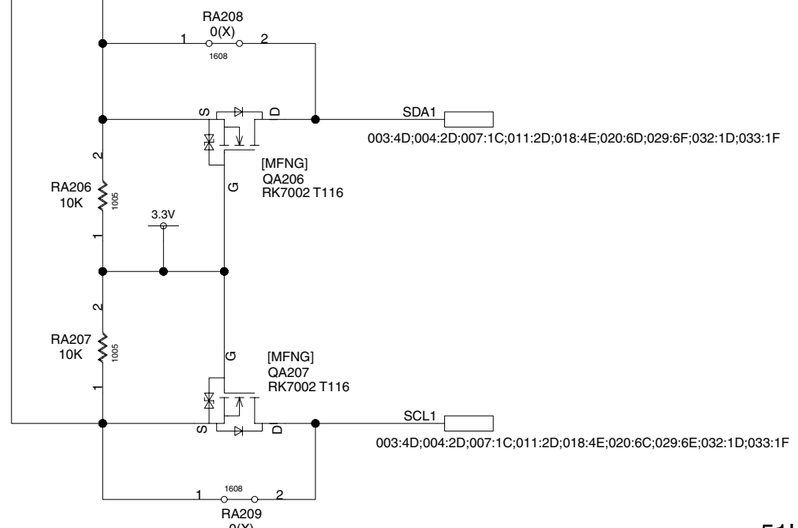
51H94/57H94
HYPER SIGNAL (32/34)
SHEET-32/34

SH.NO.
32


9V1
L522
22uH
L523
KETSU
CR509
16V
100uF
C508
0.1uF
R503
10k(J)
R507
4.7k(J)
C510
10nF(K)
C517
0.1uF(K)
R500
3.3K(J)
R570
KETSU
R581
0(X)
Q517
2SC4081 T106Q
R578
100(J)
R582
470(J)
R579
KETSU
CLP_AD
034:7C
R580
1.5K(J)
[TRP]
Q511
2SA1576A
005:2B;031:8B
Y_2_2
R517
2.2k(J)
R518
2.2k(J)
C524
0.1uF(Z)
R548
1k(J)
C512
0.1uF(Z)
[TA1383FG]
Q501
D-SYNC1/
Y3/G IN
Cb/Pb/B IN
Cr/Pr/R IN
Y1/SYNC1 IN
Y2/SYNC2 IN
D-SYNC2 IN
VD IN
HD IN
C1 IN
C2 IN
3.58 Xtal
APC FILTER
SDA
SCL
ADDRESS
VCC1(9V)
VCC2(5V)
SYNC OUT
Cb/Pb/B OUT
Cr/Pr/R OUT
Y OUT
fsc OUT
VD OUT
HD OUT
MONITOR OUT
AFC FILTER
HVCO
DIGITAL GND
GND1
GND2
R534
100(J)
Q516
2SA1576A
C529
KETSU
R547
KETSU
X501
3.58 xtal
C501
12pF(J)
C511
0.22uF(Z)
R501
30K(J)
C504
2.2nF(K)
R502
100
C502
0.1uF
C542
16V
100uF
003:4D;004:2D;007:1C;
011:2D;018:4E;020:6D;
029:6F;032:1D;034:7D
SDA1
R516
100(J)
SCL1
R514
100(J)
003:4D;004:2D;007:1C;011:2D;018:4E;020:6C;029:6E;032:1D;034:7F
R583
2.2k(J)
R505
100(J)
VD_SIG
034:7B
R577
KETSU
R584
10k(J)
QS10
2SC4081 T106Q
R576
12K(J)
RY575
3.3K(J)
R506
2.2k(J)
R508
100(J)
HD_SIG
034:7B
C582
100pF(J)
R504
10k(J)
Q502
2SC4667-O(TE85R)
R509
12K(J)
RY576
3.3K(J)
R585
10k(J)
C518
KETSU
R562
470(J)
X500
CSBLA503KEC2F30-B0
5V2
L520
22uH
L521
KETSU
GND
51H94/57H94
HYPER SIGNAL (33/34)
SHEET-33/34
SH.NO.
33
(57/58)







51H94/57H94
HYPER SIGNAL (34/34)
SHEET-34/34

SH.NO.
34